

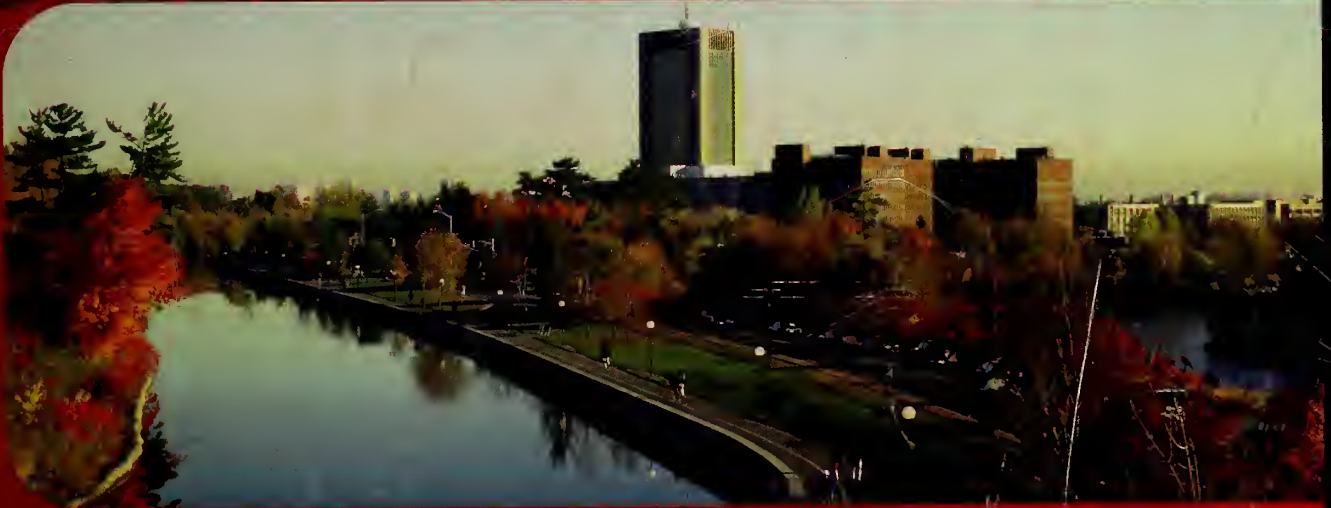


**Carleton**  
UNIVERSITY

*Education*  
for **Life**

1998/99

# Undergraduate Calendar



1998/99

Undergraduate  
Calendar

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**Carleton**  
**UNIVERSITY**

Carleton University  
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Ottawa, Ontario, Canada K1S 5B6  
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Fifty-Seventh Annual  
Undergraduate Calendar  
for the Academic Year 1998-99

This Calendar is published several months in advance of the beginning of the academic year. The University reserves the right without liability or penalty, and without notice, to make changes in the services and programs it offers, including alteration of the fee schedules and cancellation of particular courses.



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## Educational Equity Policy

### Preamble

in support of Carleton University's commitment to Section 15 of the Federal Charter of Rights and Freedoms, Sections 4 and 13 of the Ontario Human Rights Code, and the University's mission statement,

### Statement of Principles

Carleton University is committed to providing equity in its educational programs and services and a welcoming environment for all individuals regardless of race, ancestry, place of origin, colour, ethnic origin, national origin, creed, sex, sexual orientation, age, marital status, family status, or disability as defined in the Human Rights Code of Ontario.

Carleton University strives for the best possible educational experience for all of its students. The University attempts, to the best of its ability, to encourage and assist all students to succeed academically and as members of the University community.

### Educational Equity Policy Statement

in support of its commitment to excellence in teaching, scholarship, and research, Carleton University seeks to

identify University policies, programs, and services that need to be changed, enhanced, or created, subject to the availability of resources, in order to:

(a) increase the access, retention, and graduation of groups of students who have traditionally been under-represented, under-served, and/or disadvantaged in University programs, and

(b) provide a supportive and welcoming learning environment for all students.

The designated groups for education equity include, but are not limited to: women; Aboriginal peoples; persons with disabilities; racial, ethnic, or visible minorities; the economically disadvantaged; mature and part-time students; gay men, lesbians, and bisexuals; and international students.

The University undertakes to provide reasonable accommodation to these groups and, to the extent that it is possible, to implement special measures to support the achievement of the University's education equity goals.

In support of its commitment to achieve and maintain a hospitable campus climate for all students, faculty, and staff, the University undertakes to provide education and training on human rights issues as these relate, *inter alia*, to curriculum and pedagogy.

## Policy on Discrimination and Sexual Harassment

Carleton University is a community of faculty, staff, and students who are engaged in teaching, learning and research. Its members are part of the community at large and are governed by the law common to all persons. But membership in the academic community also entails certain rights and responsibilities. The University respects the rights of speech, assembly, and dissent; it prohibits discrimination on the basis of race, ancestry, place of origin, colour, ethnic origin, national origin, creed, sex, sexual orientation, age, marital status, family status, political affiliation or belief, or handicap that is defined as such in the Human Rights Code of Ontario; it requires tolerance and respect for the rights of others; and it promotes an environment conducive to personal and intellectual growth.

(Please refer to Offences of Conduct, Academic Standing, p. 50.)

# The University

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- Electronic Access to the Undergraduate Calendar
- Accreditation of the University
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# Electronic Access to the Undergraduate Calendar

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Electronic versions of the Undergraduate Calendar can be accessed on the Internet. The electronic version is usually available within two months after the print version (i.e. by June 1). Every effort has been made to ensure the accuracy of these electronic versions, but in the case of any discrepancy, the printed Calendar shall be considered to be the University's official statement.

The electronic versions can be accessed by all users at <http://www.carleton.ca>. For those with campus CHAT accounts, these electronic versions are also available under the Carleton Information option.

## Accreditation of the University

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Carleton University, a founding member of the Council of Ontario Universities, enjoys full accreditation by the Ministry of Education and Training of the Province of Ontario.

The University is a charter member of the Association of Universities and Colleges of Canada. It is a member of the Association of Commonwealth Universities and participates fully in the Commonwealth Scholarship and Fellowship Plan. It is also a member of the International Association of Universities.

The baccalaureate degree programs in Aerospace, Computer Systems, Civil, Electrical, Environmental and Mechanical Engineering are accredited by the Canadian Engineering Accreditation Board of the Canadian Council of Professional Engineers.

The B. Arch. degree offered by the School of Architecture is recognized by the Canadian Architectural Certification Board as a prerequisite to apply for certification of academic qualifications for registration to practise as an architect in a provincial association.

The Bachelor of Computer Science Honours Degree Program is accredited by the Accreditation Council of the Canadian Information Processing Society and the Computer Science Association.

The School of Industrial Design was established at Carleton on the recommendation of a study prepared by the Association of Canadian Industrial Designers. Initial funding for the school was supplied by Design Canada, Ministry of Industry, Trade and Commerce.

Carleton University participates in the Ontario Student Assistance Program, other provincial assistance programs and the Canada Student Loans Program and is fully recognized as one of the few participating institutions outside the province of Quebec for bursary assistance through the Quebec Loans and Bursaries Program.

Carleton University's degree programs are recognized in the United States by the Federal Guaranteed Student Loans Program and for student aid to veterans through the Veterans Administration.

# Carleton University — Education for Life

If you or a member of your family are thinking about joining the more than 18,000 students who'll be making their way to Carleton University next year, you're probably interested in learning more about our programs and services, about our accomplishments and reputation, about the people who study and work here.

This calendar contains vital information about the University's academic programs, regulations and procedures. It is information that is not only important to prospective students, but to returning students, visiting scholars, researchers and others who are keen on getting a reading of Carleton's academic strengths and overall direction.

If you're already a member of the Carleton community, much of the information contained in this introduction will already be familiar to you. If you're still getting to know us, this section is intended to provide you with a sense of what we have to offer and what it's like to be a Carleton student. We hope that what you find here will pique your interest, and that you'll want to get to know us better. A list of additional sources of information that you'll find at the end of this piece can help.

## A reputation for excellence

Our students come from every province and territory in Canada and from nearly 100 countries from around the world. Why do they choose Carleton? For most, it's a combination of things. Our worldwide reputation for quality programs—especially in the fields of public affairs, management and high technology and in the liberal arts disciplines, including those offered by our highly acclaimed College of the Humanities—is usually an important factor.

How did we earn this reputation for excellence? Here are just a few examples.

- Carleton has won more of the coveted 3M Teaching Awards than any other university in Ontario, and per faculty member, more than any other university in Canada.
- Carleton students have a better success rate in obtaining Ontario graduate scholarships than students from the University of Toronto, Queen's University, McMaster University or the University of Western Ontario.
- Carleton is the largest supplier of graduates to Canada's premier high-tech corporation, Nortel.
- In 1996-1997, Carleton faculty published 138 books, 1,739 articles and seven original musical compositions. That same year, sponsored research at the University was valued at \$26.5 million.
- For six of the last seven years, Carleton commerce students have placed first in the accounting section of the national Inter-collegiate Business Competition.
- For five of the last six years, Carleton engineering students have won a competition sponsored by the Association of Professional Engineers of Ontario.
- In 1996, one out of every 10 recruits in the federal government's foreign service officer program was a Carleton graduate.
- Graduates from our economics, sociology and statistics programs rank number one on the recruiting lists of the federal Public Service Commission.

Our reputation for excellence is built, in part, on the success of our students. We're determined to attract a larger proportion of Canada's very best, and thanks to our alumni—who are among the most generous in the country for a university our size—we're able to offer a generous scholarship program to reward students who have excelled at the secondary school level. Our top undergraduate award is valued at \$20,000 over four years.

## A pioneering spirit

The dynamic, pioneering spirit that gave birth to Carleton nearly 60 years ago is still very much alive at the University today. In the early 1940s, our founding president, Henry Marshall Tory, dreamed about creating a non-sectarian university in the nation's capital to provide learning opportunities for the thousands of men and women who had interrupted their studies to come to Ottawa in support of the war effort.

Tory was a seasoned veteran of the Canadian and international university communities. He had already served as founding president of two universities in Canada—the University of Victoria in British Columbia and the University of Alberta—and had helped to create a university in Great Britain. Long after his retirement, he and a group of like-minded citizens in Ottawa, founded Carleton College in 1942.

For years, the college operated from church basements and rented facilities, without the benefit of a university charter or government grants. Full-time programs in journalism and public administration—the first to be offered in Canada—were introduced in 1946. In 1957, an act of the Ontario legislature bestowed degree-granting status on the institution, and Carleton College became Carleton University.

While we've grown to serve an increasingly diverse national and international clientele—providing undergraduate and graduate degree programs in more than 50 areas of study and supporting more than 90 research centres across campus—we've never lost sight of our roots in the Ottawa community. Today, our School of Continuing Education serves part-time and full-time learners throughout Eastern Ontario and West Quebec via Carleton's instructional television (Itv) programs offered through local cable television and a variety of other delivery systems.

## An education for life

Our programs, especially those at the undergraduate level, are designed to provide you with an education for life. Regardless of your choice of faculties, we'll help you to develop critical, analytical and communications skills that you'll be able to use throughout your lifetime, both at work and at home.

We know that, for many students, a university education is an important first step in preparing for the job market. In addition to a sound academic background, having hands-on experience can be a deciding factor in your employability. We offer a wide array of co-op and industrial experience programs, internships, practicums, apprenticeships and voluntary work placements to students who want to complement their academic studies with on-the-job experience. In addition, we provide on-campus jobs to more than 1,000 undergraduate students through our work-study program.

Being familiar with a foreign culture has always been an asset, but in today's global economy, having that kind of experience can also give you an added advantage in the workplace. Carleton has exchange agreements with some 50 universities in more than 30 countries, providing you with an opportunity to learn about another culture first-hand.

## Friendly, caring staff; quality programs; quality services

Our students tell us that one of the things they like most about Carleton is the University's friendly, informal and caring atmosphere.



You'll find that our teaching and support staff are accessible and genuinely interested in helping you to succeed. Our commitment to equity has led us to establish offices and centres to address the special concerns of aboriginal peoples, women, race equity, people with disabilities, international students, and gays, lesbians, and bisexuals, and to help make every member of the University community feel welcome and at home.

Our students also give us high marks for our services. For example, Carleton was one of the first universities in Canada to offer Internet access to all of its students. Today, our award-winning CHAT program provides students and faculty with news groups, discussion groups, email and Internet services that allow them to explore learning opportunities far beyond the classroom, 24-hours-a-day.

The MacOdrum Library is another key service, housing more than one million volumes and an extensive collection of microfilms, archival material, maps and documents that are accessible through an on-line catalogue system.

Throughout the year, we offer workshops and seminars that can help you make a successful transition to university studies and provide you with life skills that you can use throughout your university career and beyond. In the first year of the B.A. program, small group seminars are led by a faculty member who acts as a teacher and mentor helps students find their place in the intellectual life of the University. Our study workshops deal with issues such as time management, campus resources, financial planning, essay-writing, note-taking, speed-reading and learning how to use various word-processing software. In addition, the University's Writing Tutorial Service offers one-to-one tutoring—free-of-charge to students in all faculties—including help with your class assignments, from first draft to final revisions.

## The advantage of studying in Canada's capital

Our location in Canada's capital is another reason why many students choose to study at Carleton. We've used our location in Ottawa to good advantage by forming close ties to federal government departments and research laboratories and to the dozens of high tech companies throughout the region that, together, make up one of the largest concentration of high tech firms in the country.

We've also formed ties to the University of Ottawa, combining our academic strengths, expertise and research resources to offer joint graduate programs in science and engineering.

Being in the nation's capital has helped to shape the overall direction of many of our academic programs. Historically, we've tended to approach the study of a variety of disciplines—journalism, public administration, social work and international affairs are some examples—from a distinctly Canadian perspective. This, as well as our pioneering work in the area of interdisciplinary studies, is another reason why Carleton is the first choice of so many students from across the country.

You'll find Ottawa is a lively blend of culturally diverse communities—of English, French and new Canadians—of historic landmarks and vibrant high-tech companies, of quite residential neighborhoods and bustling outdoor markets. Just minutes away from campus are a host of research and study resources you simply won't find elsewhere—the National Archives, the National Research Council, the National Arts Centre, the National Gallery, the Museum of Civilization and the Museum of Science and Technology are but a few examples.

## A vibrant campus

Like Ottawa, Carleton is clean and safe and built to a human scale. Our beautiful 62-hectare campus, bordered by the Rideau River and the historic Rideau Canal, is just 10 minutes from downtown.

The campus is home to some 1,700 residence students. An exten-

sive tunnel system that links the campus's 29 buildings makes Carleton one of the most accessible universities in the country.

Campus life is enriched by more than 100 clubs and student organizations including an FM radio station, a student-run weekly newspaper and theatre troupe. In addition, we offer a wide range of men's, women's and co-ed intramural sports, plus nine varsity teams for women and eight for men.

Our recreational facilities include a 50-metre indoor pool, saunas and whirlpools, a fitness centre, a heavy weight room, nine air-conditioned international squash courts, five outdoor tennis courts, a double gymnasium and a football field. And to top it off, there are fitness classes to satisfy just about every interest, from ballet and karate, to scuba-diving, canoeing, tennis and rock-climbing.

A network of recreational pathways right next door to the campus connects to hundreds of kilometres of jogging and cycling pathways that crisscross the national capital region. The Rideau Canal and Dow's Lake are also adjacent to the campus, offering skating in the winter and boating and canoeing in the spring, summer and fall.

## Learning more about Carleton

We hope this brief overview of Carleton will make you want to learn more about us. The program descriptions contained elsewhere in this calendar are a good place to start. If you have any questions after reviewing this material, here are some sources for additional information.

### *General information on undergraduate academic programs and admissions*

Student Liaison Services  
315 Robertson Hall  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario  
K1S 5B6  
Toll-free (in Canada): 1-888-354-4414  
Tel: (613) 520-3663  
Fax: (613) 520-3847

### *Admissions for graduate programs*

Faculty of Graduate Studies and Research  
1512 Dunton Tower  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario  
K1S 5B6  
Tel: (613) 520-2525  
Fax: (613) 520-4049

### *Special and non-degree programs*

School of Continuing Education  
302 Robertson Hall  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario  
K1S 5B6  
Tel: (613) 520-3500  
Fax: (613) 520-4456

### *Scholarships, bursaries and awards*

Awards Office  
202 Robertson Hall  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario  
K1S 5B6  
Tel: (613) 520-3600  
Fax: (613) 520-3560

# Carleton Glossary

The following are some terms frequently used throughout this Calendar, together with a brief explanation of their general meaning.

## **Academic Standing**

The performance of all students is evaluated regularly to determine whether they are meeting the standards prescribed for continuing in their program. Standards and performance indicators vary according to individual Faculties and programs.

## **Arts and Social Sciences**

At Carleton, there is a Division of Arts and Social Sciences, and a Faculty of Arts and Social Sciences. The former—the Division—comprises the Faculty of Public Affairs and Management and the Faculty of Arts and Social Sciences. The latter—the Faculty—comprises those academic units listed on p. 69.

## **arts or social science**

The phrase "arts or social science," when used in this *Calendar*, refers to all those disciplines in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management.

## **Audit**

To audit a course is to attend without working for or expecting to receive formal credit. Formal registration is required and regular tuition fees apply. Students are not permitted to submit work or to write formal examinations. (See p. 46.)

## **Bachelor's Degree (Baccalaureate)**

A university degree, for which a student follows an undergraduate degree program, (e.g. B.A.—Bachelor of Arts).

## **Bursary**

A monetary award based on good academic standing and financial need.

## **Calendar**

A university publication listing courses, degree requirements, faculty and university regulations, and names of faculty members.

## **CI - Continuation Index**

The Continuation Index is one of the factors used in the Faculties of Arts and Social Sciences and Public Affairs and Management to determine students' academic standing in their degree program and eligibility for graduation. The method of determining the CI and the effects that it has on students are described in Sections 5 and 7 under Regulations (see p. 80).

## **Concentration**

In the Division of Arts and Social Sciences, a way of completing a degree that requires students to commit to certain courses or course patterns within the Major discipline. These students may take core or foundation courses in common with all other students, but once they have committed to a Concentration within the program they are bound to follow a specified sub-set of courses in order to be certified as having completed that particular Concentration. A current example of a Concentration would be the Concentration in Geographic Information Processing (GIP) in Geography.

## **Course**

A unit of study in a given discipline identified by a unique number and name in a given department.

## **Credit**

The weight value given to an academic course. The basic unit of academic work at Carleton is the full credit, which is indicated with a weight value of 1.0 on all records documents. A course marked with the symbol ★ has a weight value of one-half credit,

and is indicated with a value of 0.5 on all records documents. Courses may have weight values greater than 1.0 (e.g. 1.5, 2.0, 2.5 credits), and are also indicated in this Calendar.

## **Department**

A division of a faculty concerned with a specific branch of instruction of study.

## **Discipline**

A branch of learning or a field of study.

## **Faculty**

(a) A major teaching division of the University, divided into departments, schools or other units and headed by a dean. (e.g. Faculty of Arts and Social Sciences);

(b) The academic teaching staff of the University.

## **Full-time student**

A student who is registered in a minimum of 4.0 credits or the equivalent during the Fall/Winter session.

## **GPA - Grade Point Average**

The Grade Point Average is a number calculated by dividing the number of grade points achieved in a set of successfully completed academic courses by the total credit value of those courses. A system of Weighted Grade Points is used in the Faculty of Engineering. Some individual departments in other faculties also use weighted grade points.

## **Honours Degree Program**

A specialized university program, normally requiring four years or 20.0 full-credits or their equivalent to achieve the degree.

## **Internal Transfer**

The process of applying for and receiving approval to change from one degree or certificate program to another. Applications for such transfers must be completed in accordance with published deadlines and applicants must meet the requirements of the program into which they wish to transfer.

## **itv**

Instructional Television. The provision of courses to both on and off-campus students through cablevision and videocassette distribution services.

## **Letter of Permission**

A statement provided to students by their home universities, giving them permission to take academic courses elsewhere and to transfer those courses to the home university. At Carleton, students must obtain such Letters from their Faculty Registrarial Services Offices, prior to taking the courses which are to be transferred.

## **Major(s)**

The discipline(s) or field(s) in which a student specializes during the course of degree studies. In some programs, options and program option(s) represent equivalent terminology.

## **Major Degree Program**

A university program in the Faculty of Science, normally requiring three years or 15.0 full-credits or their equivalent to achieve the degree.

## **Mature Applicant**

Individuals who lack normal entrance requirements as published in the Calendar, but who will be 21 years of age or over by December 31 of the year in which they wish to enroll, may receive consideration for admission to a degree program either on a full-time or part-time basis. (See p. 36.)



**Minor**

A specified number of credits within a discipline that will provide students in another discipline with a grounding in the second discipline. The credits necessary for a Minor can be all required, or a mix of required and optional credits.

**OAC**

Ontario Academic Course. A prescriptive, provincially designed university entrance course.

**Ombuds Service**

An independent service which investigates individuals' grievances or complaints; reports findings and helps to achieve equitable settlements.

**Option**

An addition to a degree which a student may choose to undertake. Pursuing the option does not affect eligibility for the degree since the remainder of the course pattern(s) will be constant. That is, a student may complete the degree with or without taking the option; a student in the option may drop it and still receive the degree. The most common form of Option at Carleton at the moment is the Co-Op Option: students in the Option generally take the same academic courses as all other students, but they add Co-Op placements to their regular academic requirements.

**Part-Time Student**

A student who is registered in fewer than 4.0 credits or the equivalent during any academic session.

**B.A. Degree Program**

A university program in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management, normally requiring three years or 15.0 full-credits or their equivalent to achieve the degree.

**Preclusion**

A course that when successfully completed prevents a student receiving credit for another course because of the similarity or overlap in material. e.g. Business 42.171★ - "Precludes credit for Business 42.210★."

**Prerequisite(s)**

A course or courses that must be successfully completed before the student can register for the course described. In most cases, for example, the student must have taken a 100-level course in a particular discipline before being admitted to a course in the same discipline at the 200- or 300-level. The 100-level course is, therefore, a prerequisite.

**Professional Development Course**

A non-credit course, seminar or workshop offered through the Carleton Professional Development Centre. These courses, seminars and workshops carry no credit towards a university degree program and are not provincially funded.

**Program**

A group of approved courses, generally a combination of required and optional (elective) courses, which leads to a degree or certificate.

**Program Year**

Progress through a degree program is normally measured in terms of program years. Years are traditionally classified as First year, Second year, and so on. Progression from one year to the next is determined either by the accumulation of credits or the completion of required patterns of credits.

**Public Affairs and Management**

The Faculty of Public Affairs and Management comprises those academic units listed on p. 113.

**Registration**

The process of selecting, enrolling in, and remitting fees for courses for an academic session.

**Scholarship**

A monetary award based on academic achievement.

**Special Student**

A student not admitted to a degree program but registered in degree-credit courses to: qualify for admission, to improve professional or vocational qualifications, for transfer credit to another institution, or for personal interest.

**Stream**

In the Division of Engineering and Science, a way of completing a degree that requires students to commit to certain courses or course patterns within the Major Discipline. These students may take core or foundation courses in common with all other students, but once they have committed to a Stream within the program they are bound to follow a specified sub-set of courses in order to be certified as having completed that particular Stream. A current example of a Stream would be the Aerospace Stream in Mechanical and Aerospace Engineering.

**Thematic Major**

A program that combines the courses of two or more academic units, usually under the auspices of a Committee of Management or similar administrative structure. The best current examples at Carleton are Criminology and Criminal Justice, and Women's Studies, both of which rely on courses from several Departments.

**Transfer Credit**

Credit given for work done at another institution which may be granted for work completed prior to admission or during degree studies by means of a Letter of Permission.

**Tuition Fees**

Those fees assessed at registration for costs related to courses to be taken in the academic session. Tuition fees include laboratory and survey camps, where applicable. In addition compulsory miscellaneous fees are also assessed.

**Undergraduate Student**

A university student working towards a bachelor's degree.

**Withdrawal**

The formal procedure, according to regulations laid down by the University, of withdrawing from a course or courses, or from the University. (See p. 47.)



# The Academic Year

## Undergraduate Studies

- The following schedule contains the dates prescribed by the University Senate for academic activities and for procedures of academic administration.
- The academic year is divided into two sessions.

### Fall/Winter Session

- The Fall/Winter session commences in September and continues until the end of the examination period in April. The *Fall term* of the Fall/Winter session consists of the months September to December. The *Winter term* consists of the months January to April. Courses are offered during the Day and the Evening.

### Summer Session

- The Summer session commences in May and continues until the end of the examination period in August. The *First term* of the Summer session commences in mid-May and continues until the end of June. The *Second term* commences in July and continues until mid-August. Courses are offered during the Day and the Evening.

## Fall/Winter Session 1998-99

### September 1

- Last day for receipt of applications from potential Fall graduates.

### September 5-12

- Prep Week. Academic and Social orientation to the campus.

### September 8-9

Preparation Activity Days. All students are expected to be on campus. Class and laboratory preparations, departmental introductions for students, and other academic preparation activities will be held.

#### September 9

Orientation for Teaching Assistants.

### September 7

- Statutory holiday; University closed.

### September 8

- Fall term begins.

### September 10

- Fall and Fall/Winter classes begin.

### September 11

- Last day to complete registration, including fee payment, for Fall/Winter session without incurring a late registration charge.
- Last day to withdraw from Fall/Winter and Fall-term courses, incurring only the Registration Charge.
- Last day to withdraw completely or change to part-time status, incurring only the Registration Charge.

### September 12

- Cancellation of course selections for those students who have not concluded fee payment arrangements.

### September 14

- Late registration begins.

### September 25

- Last day for late registration.
- Last day to change courses or sections for Fall/Winter and Fall-term courses.

### September 30

- Last day for receipt of applications for review of final grades in Summer Session courses.

### October 9

- University Day. Undergraduate classes suspended.

### October 12

- Statutory holiday; University closed.

### October 24

- Summer-session deferred final examinations will be held.

### November

- Fall convocation for the conferring of degrees; date to be announced.

### November 6

- Last day to withdraw from Fall-term courses.
- Last day for any Fall-term fee adjustment when withdrawing from Fall-term or Fall/Winter courses.
- Last day to submit, to the Paul Menton Centre for Students with Disabilities, Formal Examination Accommodation Forms for December examinations.

### November 15

- Last day for receipt of applications for admission to a degree program for the winter-term of the 1998-99 Fall/Winter session ("January admissions").

### December 7

- Last day of Fall-term classes.
- Fall Term ends.
- Last day for receipt of applications from potential Winter (February) graduates.
- Last day for receipt of applications for degree program transfers for Winter term of Fall/Winter session.
- Last day for handing in term assignments for Fall-term courses, subject to any earlier course deadline.

### December 9 - 22

- Final examinations in Fall term courses and mid-term examinations in Fall/Winter courses may be scheduled as announced. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

### December 18

- Last day for entire fee adjustment when withdrawing from Winter-term courses.

### December 19 - January 1, 1999

- Period during which students may withdraw from Winter-term courses, incurring only the Registration Charge.

### January 4

- Winter term and Winter-term courses begin.

- Last day to complete registration, including fee payment, for Winter term, without incurring a late registration charge.

### January 9

- Cancellation of course selections for new January registrants who have not concluded fee payment arrangements.

### January 15

- Last day for late registration for Winter-term courses.
- Last day to change courses or sections for Winter-term courses.

### January 30

- Last day for receipt of applications for review of final grades in Fall-term courses.

### February 1

- Last day for receipt of applications from potential Spring graduates.
- Last day for receipt of applications for admission to the Bachelor of Architectural Studies and the Bachelor of Social Work degree programs for the 1999/2000 Fall/Winter session.

### February 22 – 26

- Winter Break; classes suspended.
- Fall-term deferred final examinations will be held.

### March 1

- Last day for receipt of applications to the Bachelor of Music degree program for the 1999/2000 Fall/Winter session.

### March 12

- Last day to withdraw from Fall/Winter and Winter-term courses.
- Last day to submit, to the Paul Menton Centre for Students with Disabilities, Formal Examination Accommodation Forms for April examinations.
- Last day for any Winter-term fee adjustment when withdrawing from Winter-term or Fall/Winter courses.

### April 1

- Last day for receipt of applications for admission to a program (except Bachelor of Architectural Studies, Bachelor of Humanities, Bachelor of Music, and Bachelor of Social Work), for the 1999/2000 Fall/Winter session, from candidates whose documents originate outside Canada or the United States.
- Last day for receipt of applications for admission to the Bachelor of Humanities program for the 1999/2000 Fall/Winter session.

### April 2

- Statutory holiday; University closed.

### April 5

- Last day of Fall/Winter and Winter-term classes. Classes scheduled on this day will be those appropriate to a Friday. Some lectures, laboratories, review tutorials, etc. may take place in Review Week until the end of Winter term on April 9.

### April 6 - 9

- Review Week.
- Some lectures, laboratories, review tutorials, etc. may take place.

### April 9

- Winter term ends.

### April 12

- Last day for handing in term assignments, subject to any earlier course deadline.

### April 12– 29

- Final examinations may be scheduled as announced. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

### May 1

- Last day for receipt of applications for admission to the Bachelor of Journalism program for the 1999/2000 Fall/Winter session.

### June 1

- Last day for receipt of applications for admission to a program (except Bachelor of Architectural Studies, Bachelor of Humanities, Bachelor of Journalism, Bachelor of Music and Bachelor of Social Work) for the 1999/2000 Fall/Winter session from mature applicants, from those presenting post-secondary education qualifications and from those transferring from other universities in Canada or the United States.
- Last day for receipt of applications for admission to a program (except Bachelor of Architectural Studies, Bachelor of Humanities, Bachelor of Journalism, Bachelor of Music and Bachelor of Social Work) for the 1999/2000 Fall/Winter session from applicants with high school qualifications from Canada or the United States.

### June

- Spring convocation for the conferring of degrees, date to be announced.

### June 30

- Last day for receipt of applications for review of final grades in Fall/Winter and Winter-term courses.
- Last day for receipt of applications for internal degree transfers to allow for registration for the 1999/2000 Fall/Winter session.

### August 3– 13

- Deferred final examinations may be scheduled as announced.

## Summer Session 1999

### March 1, 1999

- Last day for receipt of applications for consideration for admission to a degree program for the 1999 Summer session.

### May 1

- Last day for receipt of applications for degree program transfers for the 1999 Summer session.

### May 14

- Last day to complete registration, including fee payment, for First-term and full-session courses, without incurring a late registration fee.

### May 17

- Statutory holiday; University closed.
- Missed classes may meet May 28.

### May 18

- Full-session and First-term courses begin.

### May 24

- Last day for late registration and course changes for First-term and full-session courses.

### June 11

- Last day to withdraw from First-term courses.
- Last day to submit, to the Paul Menton Centre for Students with Disabilities, Formal Examination Accommodation Forms for June examinations.
- Last day for any First-term fee adjustment when withdrawing from First-term or full-session courses.

### June 25

- Last day of classes for First-term. (Note: Full-session classes resume July 5.)
- Last day for handing in term assignments, subject to any earlier course deadline.

**June 28-30**

- First-term final examinations may be scheduled. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

**July 1**

- Statutory holiday; University closed.

**July 5**

- Second-term courses begin.
- Last day to complete registration, including fee payment, for Second-term courses, without incurring a late registration charge.

**July 9**

- Last day for late registration and course changes for Second-term courses.

**July 30**

- Last day to withdraw from full-session and Second-term courses.
- Last day to submit, to the Paul Menton Centre for Students with Disabilities, Formal Examination Accommodation Forms for August examinations.

- Last day for any Second-term fee adjustment when withdrawing from Second-term or full-session courses.

**August 2**

- Civic holiday; University closed.
- Evening classes missed may meet August 6.

**August 13**

- Last day of Summer-session classes.
- Last day for handing in term assignments, subject to any earlier course deadline.

**August 14 – 18**

- Summer-session examinations may be scheduled as announced. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

**September 30**

- Last day for receipt of applications for review of final grades in Summer-Session courses.

**October 23**

- Summer-session deferred final examinations will be held.



## 1998

JANUARY							FEBRUARY							MARCH							APRIL							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
					1	2	3	1	2	3	4	5	6	7	1	2	3	4	5	6	7				1	2	3	4
4	5	6	7	8	9	10	8	9	10	11	12	13	14	8	9	10	11	12	13	14	5	6	7	8	9	10	11	
11	12	13	14	15	16	17	15	16	17	18	19	20	21	15	16	17	18	19	20	21	12	13	14	15	16	17	18	
18	19	20	21	22	23	24	22	23	24	25	26	27	28	22	23	24	25	26	27	28	19	20	21	22	23	24	25	
25	26	27	28	29	30	31								29	30	31					26	27	28	29	30			
MAY							JUNE							JULY							AUGUST							
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					1	2		1	2	3	4	5	6		1	2	3	4									1	
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8	
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15	
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22	
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31		23	24	25	26	27	28	29	
31																					30	31						
SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER							
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			1	2	3	4					1	2	3	1	2	3	4	5	6	7				1	2	3	4	5
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	
27	28	29	30				25	26	27	28	29	30	31	29	30						27	28	29	30	31			

## 1999

JANUARY							FEBRUARY							MARCH							APRIL						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2		1	2	3	4	5	6		1	2	3	4	5	6					1	2	3
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13	4	5	6	7	8	9	10
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20	11	12	13	14	15	16	17
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27	18	19	20	21	22	23	24
24	25	26	27	28	29	30	28							28	29	30	31				25	26	27	28	29	30	
31																											

MAY							JUNE							JULY							AUGUST						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1				1	2	3	4	5		1	2	3				1	2	3	4	5	6	7
2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14
9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28
23	24	25	26	27	28	29	27	28	29	30				25	26	27	28	29	30	31	29	30	31				
30	31																										

SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4					1	2			1	2	3	4	5	6				1	2	3	4
5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
12	13	14	15	16	17	18	10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
19	20	21	22	23	24	25	17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
26	27	28	29	30			24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
							31																				

# Miscellaneous Information

## The Organization of the University

During the 1996-97 and 1997-98 academic year, Carleton University underwent a series of changes to its academic administrative structures. Beginning in July 1997, the University now has two Academic Divisions: (1) the Division of Arts and Social Sciences and (2) the Division of Engineering and Science. The Division of Arts and Social Sciences comprises a Faculty of Arts and Social Sciences and a Faculty of Public Affairs and Management. The Division of Engineering and Science comprises a Faculty of Engineering, a Faculty of Science, a School of Architecture, a School of Computer Science, a School of Industrial Design and a School of Mathematics and Statistics. At the graduate level, there is a Faculty of Graduate Studies and Research that is responsible for all graduate programs in the University.

Here are the administrative affiliations of all academic units:

**Faculty of Arts and Social Sciences:** Art and Culture; Canadian Studies; Comparative Literary Studies (graduate program only); English Language and Literature; French; Geography; History; Humanities; Interdisciplinary Studies; Linguistics and Applied Language Studies; Philosophy; Psychology; Sociology/Anthropology; Women's Studies.

**Faculty of Engineering:** Civil and Environmental Engineering; Electronics; Mechanical and Aerospace Engineering; Systems and Computer Engineering. Architecture. Industrial Design.

**Faculty of Public Affairs and Management:** Business; Central/East European and Russian-Area Studies; Economics; International Affairs (graduate program only); Journalism and Communication; Law; Political Economy (graduate program only); Political Science; Public Administration; Social Work

**Faculty of Science:** Biochemistry; Biology; Chemistry; Earth Sciences; Environmental Science; Mathematics and Statistics; Physics; Neuroscience. Computer Science.

The University's Faculty of Graduate Studies and Research offers programs leading to degrees in Master of Arts, Master of Journalism, Master of Science, Master of Engineering, Master of Social Work, Master of Computer Science, Master of Management Studies, and Doctor of Philosophy studies in various fields. It also offers a program leading to a Graduate Diploma in Public Administration.

## How to Use the Calendar

For ease of use, this *Calendar* is divided into four sections: The University; The Faculties; The Academic Units, Programs and Courses; and General Information. The items in the Table of Contents (p. 2) are arranged alphabetically within each section, and the Index (p. 473) can be used to find specific information within these sections.

The *Calendar* is also available on the Internet. The electronic version is normally available within two months after the publication of the print version (i.e. by June 1). Earlier versions – back to 1993-94 – are also available. These electronic versions can be accessed at [gopher.carleton.ca](http://gopher.carleton.ca) and at <http://www.carleton.ca> (under the Admissions, Programs and Courses option). Care is taken to see that this *Calendar* accurately reflects the decisions taken by the Senate and the Board of Governors of Carleton University; but if there is a discrepancy between this *Calendar* and the Minutes of such decisions, the Minutes shall be considered to be the University's official statement.

Students at Carleton are governed by regulations at the University level, at the Faculty level, and at the level of their academic unit. Most academic units share common Faculty regulations with others, and to note which Faculty a particular unit belongs to, this *Calendar* lists the Faculty affiliation, in parentheses, under the name of the unit, on the first page of its section. Where a unit offers degrees in two Faculties, both Faculties are listed.

Three units – Architecture, Computer Science, and Industrial Design – have unique regulations, and so no Faculty affiliation is shown for them. These three units have administrative connections to the Faculties (Architecture and Industrial Design to the Faculty of Engineering, and Computer Science to the Faculty of Science), but their regulations are self-contained; students enrolled in these units are still subject to general University regulations.

## Administration of Regulations

Students are responsible for ensuring that the courses in which they register conform to the requirements of their academic program. The regulations published in this *Calendar* include the main legislation governing admission, standing and graduation for undergraduate study as approved by the Senate. Advice on more specific rules or interpretations that may affect a student's academic status is available from departmental and Registrarial Services offices.

Students have the right to appeal the application of a regulation, and should enquire about procedures at the appropriate Registrarial Services office.

## Registrarial Services

Registrarial services are available to students through the following offices:

### New Applicants and Prospective Students

*Student Liaison Services*  
315 Robertson Hall  
Telephone: 520-3663

### Current Undergraduate Degree and Certificate Students

*Faculty of Arts and Social Sciences*  
318 Paterson Hall  
Student Records: 520-7460  
Advising: 520-7462

*Faculty of Public Affairs and Management*  
D382 Loeb Building  
Student Records and Advising: 520-3902

*Faculty of Engineering*  
(including Architecture and Industrial Design)  
2090 Minto Case Building  
Telephone: 520-5668

*Faculty of Science*  
(including Computer Science)  
2201 Herzberg Laboratories  
Telephone: 520-4440



## Special Students

*School of Continuing Education*  
302 Robertson Hall  
Telephone: 520-3500

## Classification of Students

For purposes of studying at Carleton University and for the administration of regulations governing these studies, the following student classifications are recognized.

### Full-Time Undergraduate Student

A student who is registered in a minimum of 4.0 credits during the Fall/Winter session, or a minimum of 2.0 credits in the Summer session.

### Part-Time Undergraduate Student

A student who is registered in fewer than 4.0 credits during the Fall/Winter session, or fewer than 2.0 credits in the Summer session.

### Special Student

A student who is registered in a degree-credit course or courses but who has not been formally admitted to an undergraduate program.

### Professional Development Student

A student who is registered in a professional development course, seminar or workshop.

## Type of Instruction

Carleton University courses use many different types of instruction. A course may use more than one of the various types of instruction. The types of instruction - using the abbreviations - are indicated in the Class Schedule booklet.

The various Types of Instruction are:

Film Screening (FLM)  
Discussion Group (GRP)  
Laboratory (LAB)  
Lecture (LECT)  
Seminar (SEM)  
Studio (STU)  
Tutorial (TUT)  
Workshop (WKS)

Students can expect to have courses in their programs of study which use any type of instruction. In addition students can expect

to have classes and/or examinations on campus scheduled any time between 08:30 and 22:00. In this regard attention is drawn to the statement regarding examinations (see p. 49 for a fuller statement):

It may be necessary to schedule mid-year and final examinations for classes held in the evening during the day and vice versa.

## Senior Citizens: Tuition Fees

All persons 60 years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The only charge to these students is a \$5.00 per session registration fee, plus Accident/Sickness Insurance charge (applicable to full-time studies).

## Smoking Policy

All academic and administrative buildings are smoke-free. Smoking is allowed only in the specified sections of the University Centre, Commons Building and residences.

## Other Calendars

### *Graduate Studies Calendar*

#### *Available from:*

Dean of Graduate Studies and Research  
1512 Dunton Tower  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario, Canada K1S 5B6

### *Summer Session Supplement*

#### *Available from:*

Continuing Education  
302 Robertson Hall  
Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario, Canada K1S 5B6

### *Professional and Career Development Catalogue*

#### *Directory of Courses Available from:*

Continuing Education  
302 Robertson Hall  
Carleton University  
1125 Colonel By Drive Ottawa, Ontario, Canada K1S 5B6



# Course Designation System

## Course Values

The basic unit of academic work is the *full credit*, which is indicated with a value of 1.0 on all records documents.

A course marked ★ is a *half credit* and is indicated with a value of 0.5 on all records documents.

## Course Numbering Pattern

Course numbers consist of a prefix number, which indicates the department, school, or committee under whose auspices the course is offered, and a suffix number, which indicates the year of study in which the course is usually taken. When the suffix number of an individual course is changed from one year to the next, the old number is noted, for one year only, in parentheses next to the new number in the appropriate "Courses Offered" list.

## Prefix Numbering

- 01 First-Year Seminars
- 02 Humanities
- 03 Interdisciplinary Social Sciences
- 04 Interdisciplinary Arts and Social Sciences
- 07 Cognitive Science
- 08 Art and Culture
- 09 Women's Studies
- 10 Interdisciplinary Arts
- 11 Art History
- 12 Canadian Studies
- 13 Classical Civilization
- 14 Classics
- 15 Greek
- 16 Latin
- 17 Comparative Literary Studies
- 18 English Language and Literature
- 19 Film Studies
- 20 French
- 21 English as a Second Language
- 22 German
- 23 Applied Language Studies
- 24 History
- 26 Italian
- 27 Mass Communication
- 28 Journalism
- 29 Linguistics and Applied Language Studies
- 30 Music
- 32 Philosophy
- 34 Religion
- 36 Russian
- 38 Spanish
- 42 Business
- 43 Economics
- 44 Political Economy
- 45 Geography
- 46 International Affairs
- 47 Political Science
- 48 Criminology and Criminal Justice
- 49 Psychology
- 50 Public Administration
- 51 Law
- 52 Social Work
- 53 Sociology
- 54 Anthropology

- 55 East European Studies
- 56 Sociology-Anthropology
- 57 Environmental Studies
- 59 Multidisciplinary Technology, Society, Environment
- 60 Integrated Science Studies
- 61 Biology
- 62 Environmental Science
- 63 Biochemistry
- 65 Chemistry
- 67 Geology
- 69 Mathematics (Majors)
- 70 Mathematics (Honours)
- 75 Physics
- 76 Architecture
- 77 Architecture
- 78 Architecture
- 79 Architecture
- 80 Architecture Design
- 81 Environmental Engineering
- 82 Civil Engineering
- 85 Industrial Design
- 86 Mechanical and Aerospace Engineering
- 87 Aerospace Engineering
- 88 Mechanical Engineering
- 90 Engineering, Concentration in Management
- 91 Engineering, Common Core
- 93 Information and Systems Science
- 94 Systems and Computer Engineering
- 95 Computer Science
- 97 Electronics
- 99 Engineering Projects

## Suffix Numbering

- 001-099  
Courses usually taken in Qualifying-University year
- 100-199  
Courses usually taken in First-year
- 200-299  
Courses usually taken in Second-year
- 300-399  
Courses usually taken in Third-year
- 400-499  
Courses usually taken in Fourth-year (Fourth- and Fifth-year Architecture)
- 500-699  
Courses usually taken by Graduate students

# Graduate Studies and Research

Programs of graduate study, first offered at Carleton in 1954, provide opportunities for advanced study, research and critical scholarship in a number of disciplines. Carleton's libraries, laboratories and other research facilities enable graduate students to perform scholarly work of consistently high calibre, and help to foster a spirit of independent investigation.

The location of Carleton University and the University of Ottawa enables graduate students to take advantage of the research facilities connected with many national institutions and government departments.

Carleton University and the University of Ottawa have developed a number of joint and collaborative programs at the graduate level. The details of these programs are given under the appropriate academic unit in the *Graduate Calendar*.

Where formal joint programs do not exist, a graduate student may be permitted to follow up to two full courses at the University of Ottawa. Moreover, there are reciprocal arrangements worked out among departments, institutes and schools at both universities to involve students, when it is desirable, in parts of the program of research and studies at the other institution. All interested students should consult the Chair/Director of their department, institute or school, prior to registration, in order to obtain further information on particular departmental conditions of eligibility and procedures.

Graduate programs currently offered at Carleton are the following:

*Certificate in Conflict Resolution*

*Certificate in Health and Social Policy in Development*

*Graduate Diploma in Public Administration (D.P.A.)*

*Master of Architecture (M.Arch.)*

*Master of Arts (M.A.)*

Anthropology, Applied Language Studies, Canadian Art History, Canadian Studies, Central/East European and Russian-Area Studies, Communication, Comparative Literary Studies, Economics, English, Film Studies, French, Geography, History, International Affairs, Legal Studies, Philosophy, Political Economy, Political Science, Psychology, Public Administration, Religion, and Sociology.

*Master of Computer Science (M.C.S.)*

*Master of Engineering (M.Eng.)*

Aerospace, Civil, Electrical, Materials, Mechanical Engineering, and Telecommunications Technology Management.

*Master of Journalism (M.J.)*

*Master of Management Studies (M.M.S.)*

*Master of Science (M.Sc.)*

Biology, Chemistry, Earth Sciences, Information and Systems Science, Mathematics, and Physics.

*Master of Social Work (M.S.W.)*

*Doctor of Philosophy (Ph.D.)*

Biology, Chemistry, Cognitive Science, Comparative Literary Studies, Communication, Computer Science, Earth Sciences, Economics, Engineering (Aerospace, Civil, Electrical, and Mechanical), Geography, History, Management, Mathematics, Physics, Political Science, Psychology, Public Policy and Sociology.

Joint programs with the University of Ottawa are offered in the following areas: Civil Engineering, Electrical Engineering, Mechanical and Aerospace Engineering, Biology, Chemistry, Computer Science, Earth Sciences, Mathematics and Statistics, Physics, and Economics. The Institute of Neuroscience collaborates with the University of Ottawa to offer a Specialization in Neuroscience.

The Departments of Biology, Chemistry and Psychology offer a collaborative program in Chemical and Environmental Toxicology.

The Ottawa-Carleton Institute of Mathematics and Statistics and the Department of Epidemiology and Community Studies at the University of Ottawa collaborate to offer a Specialization in Biostatistics.

The Ottawa-Carleton Institute of Computer Science and the Department of Systems and Computer Engineering participate with ConGESE (Consortium for Graduate Education in Software Engineering) to offer a Specialization in Software Engineering.

The Norman Paterson School of International Affairs and the Common Law Section of the Faculty of Law at the University of Ottawa offer a joint Master of Arts in International Affairs and Bachelor of Laws degree (M.A./LL.B.).

## Research

Organized research units conduct research in such fields as heritage conservation, statistics and probability, intelligent systems, women and work, media and communications, earthquake engineering, environmental impact assessment, and telecommunications technology management.

In addition, many interesting research projects are thriving, which are outlined in the biennial publication *Research and Studies*, available from the Office of Research Services, Carleton University, 1125 Colonel By Drive, Ottawa, Canada K1S 5B6.

Research and Studies is also available on-line at: <http://www.carleton.ca>

## Special Students

Students interested in pursuing graduate studies at Carleton are urged to note the following University regulation: a candidate who has completed courses as a Special student is not normally permitted to transfer such courses for degree credit in the Faculty of Graduate Studies and Research.

## Graduate Studies and Research Calendar and Information

The studies of each candidate will be directed by a department, institute, or school, and are governed by the general regulations outlined in the *Graduate Calendar* of the Faculty of Graduate Studies and Research. To obtain further information on graduate studies, contact the Graduate Supervisor of the individual unit concerned, or:

Faculty of Graduate Studies and Research  
Carleton University  
1125 Colonel By Drive,  
Ottawa, Ontario, Canada K1S 5B6  
Telephone: (613) 520-2525  
Fax: (613) 520-4049.

The *Graduate Calendar* is also available on-line at: <http://www.carleton.ca>



# University Office Guide

## Administrative Offices

### Academic Records

Transcripts, certifications of enrolment or graduation, and assistance with the touch-tone registration system.  
Monday to Friday, 9:00 a.m. - 5:00 p.m.  
405 Robertson Hall  
520-3607  
520-3606 (transcripts)  
520-3666 (Touchtone Help Line)

### Admissions

Information and applications for all undergraduate programs, calendars, tours, high school liaison.  
Monday to Friday, 9:00 a.m. - 5:00 p.m.  
315 Robertson Hall  
520-3663  
520-4455 (TDD service)  
520-3847 (fax)

### Athletics

Swimming pool, fitness centre, weight rooms, intramural and varsity sports, fitness classes, fitness testing and lessons.  
520-4480 (athletics office)  
520-5655 (luck shop - squash and tennis bookings)  
520-5631 (recorded information message)

### Awards Office

OSAP, Canada Student Loans, emergency loans, bursaries, scholarships, financial counselling.  
Monday to Friday, 10:30 a.m. - 4:30 p.m. (walk-in)  
9:00 a.m. - 5:00 p.m. (phone-in)  
202 Robertson Hall  
520-3600  
520-3560 (fax)

### Board of Governors

607 Robertson Hall  
520-3811  
520-3731 (fax)

### Bookstore

University textbooks, stationery supplies, magazines, Carleton merchandise, special orders.  
The following hours are subject to change:  
Monday to Thursday, 9:00 a.m. - 7:00 p.m.  
Friday, 9:00 a.m. - 4:30 p.m.  
Third floor, Southam Hall  
520-3832

### Business Office

Tuition payments, tax receipts, and overdue accounts.  
Monday to Friday, 9:00 a.m. - 4:00 p.m.  
Third floor, Robertson Hall  
520-3626

### Campus Card Office

New, lost or replacement student cards.  
Monday to Friday, 8:30 a.m. - noon, 1:00 - 4:30 p.m.  
Monday and Thursday evenings, 5:00 - 7:00 p.m.  
107 Robertson Hall  
520-3547

### Career Services

Carleton's focal point for career and employment counselling, planning and employment postings. Services include: career workshops, postings for full/part time and summer jobs; coordination of on-campus recruitment programs, career resource centre, Alumni referral services, job search information, library of calendars from Canadian, U.S. and foreign universities.  
Monday to Friday, 9:00 a.m. - 5:00 p.m.  
508 University Centre  
520-6611

### Carleton University Press

Incorporated in 1982, Carleton University Press is wholly owned by Carleton University. The Press's mission is to provide important texts at reasonable prices, and to keep all books in print as long as possible. There are approximately 300 titles in print, with an average of 25 new titles published each year. The main body of the Press list is made up of the Carleton Library Series, which is drawn from the fields of Canadian history, politics, law, economics, sociology, anthropology, geography, science, business, and media studies. Other subjects covered by our publications include art, international affairs, literature, philosophy, biography, and aboriginal peoples. The Press continues to publish the Public Policy Series, the Centre for Editing Early Canadian Texts Series, the Women's Experience Series, the Harbinger Poetry Series, the Changing Americas Series, the International Social Survey Programme Series, the International Informatics Series, the Archives of Canadian Art Series, General, Trade, and miscellaneous lists, as well as producing several journals, including the Literary Review of Canada. The Press has recently taken on the co-distribution of select titles with various Art Galleries and Michigan State University Press.

The books are available through both general trade and university bookstores, or by ordering directly from Carleton University Press. As a viable small business, Carleton University Press offers graduate and undergraduate students opportunities to gain first-hand experience in the field of publishing through several programmes, including graduate student internships, practicums in Canadian Studies, volunteering through the College for the Humanities and other fields related to editing, marketing, and publishing.  
1400 Carleton Technology and Training Centre  
520-3740  
520-2893 (fax)

### Carleton University Students' Association (CUSA)

Student services such as: a binding service, auxiliary health insurance plan, student handbook, Clubs and Societies Lounge, Off-Campus Students' Lounge, Foot Patrol, Photo Centre, International Students' Centre, Womyn's Centre, Volunteer Centre, Gay, Lesbian, Bisexual and Transgendered Centre, Bill Ellis Centre for Mature and Part-time Students, Disability Awareness Centre, University Store, Rooster's, Oliver's, funding for *The Charlantan*, Om-buds Services and Information Carleton.



Monday to Thursday, 8:30 a.m. - 6:00 p.m.  
 Fridays, 8:30 a.m. - 4:30 p.m.  
 401 University Centre  
 520-6688  
 520-3704 (fax)

### Continuing Education

Registrar's office for all Special students, information on instructional television courses, calendars for non-degree students.  
 Monday to Friday, 9:00 a.m. - 5:00 p.m.  
 Monday to Thursday evenings, 6:30 - 8:30 p.m.  
 302 Robertson Hall  
 520-3500  
 520-4456 (fax)

### Development and Alumni Services

Secures funding for the University to support the library, student aid, and other specific projects. Administers the Alumni Association which sponsors reunions and an alumni award program, assists branches and chapters to organize various activities, produces the *Carleton University Magazine* three times a year.  
 510 Robertson Hall  
 520-3636  
 520-3587 (fax)

### Health Services

Medical appointments, walk-in service, mental health counselling, health and nutrition information.  
 Monday to Friday, 9:00 a.m. - 6:00 p.m.  
 2600 Carleton Technology and Training Centre  
 520-6674  
 520-4059 (fax)

### Housing and Food Services

Information about residence accommodation, off-campus housing, and food services and meal plans.  
 Monday to Friday, 9:00 a.m. - 5:00 p.m.  
 261 Stormont House  
 520-5612 (residence accommodation)  
 520-5614 (off-campus accommodation)  
 520-3952 (fax for both)

### Information Carleton

General enquiries on University services, facilities and programs; University phone numbers, office hours and locations; events, schedules, meal plan service.  
 The following hours are subject to change:  
 Monday to Thursday, 8:30 a.m. - 6:30 p.m.  
 Friday 8:30 a.m. - 5:00 p.m.  
 Fourth floor, University Centre  
 520-7400  
 520-6620 (TDD service)  
 520-7455 (fax)  
 E-mail: [infocarleton@ccs.carleton.ca](mailto:infocarleton@ccs.carleton.ca)

### Instructional Television (Itv)

Serving students both on and off campus, courses are offered through cable and video cassette distribution from four undergraduate faculties during the Fall, Winter, and Summer terms.  
 302 Robertson Hall  
 520-3500 (course information)  
 520-2600, ext. 8560 (distribution)  
 520-4042 (Tapes-to-You)  
 520-4456 (fax)  
 520-2600 ext. 7609 (Tape Loan Service, D299 Loeb)

### Lost and Found

Information Carleton  
 Fourth floor, University Centre  
 520-7400  
 E-mail: [infocarleton@ccs.carleton.ca](mailto:infocarleton@ccs.carleton.ca)

### MacOdrum Library

Main University library, extensive reference and government documents sections, on-line library catalogue (CUBE), CD-ROM and on-line literature searching, student microcomputer rooms, access to campus network services, tours and reference/research assistance, reserve readings for courses, and photocopying centre.

#### Fall/Winter Terms

Monday to Friday, 8:00 a.m. - 11:00 p.m.  
 Saturday and Sunday, 10:00 a.m. - 11:00 p.m.

#### Spring/Summer Intersessions

Monday to Friday, 9:00 a.m. - 5:00 p.m.  
 Saturday and Sunday - closed

#### Summer Term

Monday to Thursday 8:30 a.m. - 10:00 p.m.  
 Friday 8:30 a.m. - 5:00 p.m.  
 Saturday - closed  
 Sunday - 12:00 p.m. - 5:00 p.m.  
 The Library closes for all holidays except Good Friday and Easter Monday.

These hours are subject to change.

520-5621 (library hours - recording)  
 520-2735 (information/reference desk)  
 520-2734 (circulation)  
 520-2750 (fax)

### Paul Menton Centre for Persons with Disabilities

The Centre provides individualized support services to students with documented disabilities. These services include, but are not limited to, in-class notetakers, academic accommodations, counselling support, transcription services and access to adaptive technology. The University also provides a 24-hour Residence Attendant Services Program.  
 500 University Centre  
 520-6608  
 520-3937 (TDD service)  
 520-3995 (fax)  
<http://www.carleton.ca/~pmc>

### President's Office

601 Robertson Hall  
 520-3801  
 520-4474 (fax)

### Professional Development Programs

810 Dunton Tower  
 520-3488  
 WWW address: [www.business.carleton.ca/profdev](http://www.business.carleton.ca/profdev)

### Registrars' Offices

Information and assistance for degree students on all academic regulations, declaration (change of major/honours), late withdrawals, petitions, changes of address, letters of permission and academic audits.

*Arts and Social Sciences*  
 318 Paterson Hall  
 520-7460  
 520-3713 (fax)

*Continuing Education*

Special Students  
302 Robertson Hall  
520-3500  
520-4456 (fax)

*Engineering*

2090 Minto Centre  
520-5668  
520-5682 (fax)

*Public Affairs and Management*

D382 Loeb Building  
520-3902  
520-2392 (fax)

*Science*

2201 Herzberg Laboratories  
520-4440  
520-4389 (fax)

**Senate Office**

607 Robertson Hall  
520-4478  
520-2689 (fax)

**Student Life Services**

Student Life Services offers a wide range of programs and services to assist students in their adjustment to academic life, in improving their learning skills, and in making decisions with regard to academic and career concerns. Student Life Services is also responsible for Career Services and the Paul Menton Centre for Persons with Disabilities.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

501 University Centre  
520-6600

**University Hours of Operation**

**Winter Hours**

Labour Day - April 30

Office hours are Monday to Friday, 9:00 a.m. - 5:00 p.m.

**Summer Hours**

May 1 - Labour Day

Office hours are Monday to Friday, 8:30 a.m. - 4:30 p.m.

Most University offices are closed for lunch between 12 noon and 1:00 p.m.

Some offices keep evening hours:

*Information Carleton*

Monday to Thursday  
8:30 a.m. - 6:30 p.m.

*Continuing Education*

Monday to Thursday  
6:30 - 8:30 p.m.

*Bookstore*

Monday to Thursday  
9:00 a.m. - 7:00 p.m.

The library, some cafeterias, and the athletics complex are open in the evenings.

**Academic Departments**

Aboriginal Studies: see Institute for Interdisciplinary Studies

Accounting: see Business, School of

Aerospace Engineering: 3135 Mackenzie Building,  
520-5684

African Studies: see Institute for Interdisciplinary Studies

Anthropology: see Sociology-Anthropology

Architecture, School of: 202 Architecture Building,  
520-2855

Art and Culture, School for Studies in: 423 St. Patrick's  
Building, 520-3993

Art History: 423A St. Patrick's Building, 520-2342

Asian Studies: see Institute for Interdisciplinary Studies

Biochemistry, Institute of: 203 Steacie Building, 520-3523

Biology: 587 Tory Building, 520-3888

Business, School of: 710 Dunton Tower, 520-2388

Canadian Studies, School of: 1206 Dunton Tower,  
520-2366

Central/East European and Russian-Area Studies, Institute of:  
3A59 Paterson Hall, 520-2888

Chemistry: 203 Steacie Building, 520-3841

Child Studies: 2216 Dunton Tower, 520-2368

Civil and Environmental Engineering: 3432 Mackenzie  
Building, 520-5784

Cognitive Science: 2216 Dunton Tower, 520-2368

Comparative Literary Studies, School for: 1701 Dunton Tower,  
520-2177

Computer Science, School of: 5302 Herzberg Laboratories,  
520-4333

Criminology and Criminal Justice: D485 Loeb Building,  
520-2588

Directed Interdisciplinary Studies: see Institute for Interdiscipli-  
nary Studies

Earth Sciences: 304 Tory Building, 520-4400

Economics: C876 Loeb Building, 520-3744

Electronics: 5170 Mackenzie Building, 520-5754

English Language and Literature: 1812 Dunton Tower,  
520-2310

English as a Second Language: 215 Paterson Hall,  
520-6613

Environmental Science: 2269 Herzberg Laboratories, 520-3859

Environmental Studies: B433C Loeb, 520-2600 ext. 8370

Film Studies: 423 St. Patrick's Building, 520-5606

French: 1602 Dunton Tower, 520-2168

Geography: B349 Loeb Building, 520-2561

History: 400 Paterson Hall, 520-2828

Humanities, College of the: 300 Paterson Hall, 520-2809

Industrial Design, School of: 3470 Mackenzie Building,  
520-5672

Integrated Science Studies: 2279 Herzberg Laboratories,  
520-3890

Interdisciplinary Studies, Institute for: 2216 Dunton Tower, 520-  
2368

International Affairs, Norman Paterson School of: 2A55 Paterson  
Hall, 520-6655

Journalism and Communication, School of: 346 St. Patrick's  
Building, 520-7404

Labour Studies: see Institute for Interdisciplinary Studies

Latin American and Caribbean Studies: see Institute for  
Interdisciplinary Studies

Law: C473 Loeb Building, 520-3690

Law Enforcement Studies: D485, Loeb Building 520-2588

Linguistics and Applied Language Studies, School of:  
215 Paterson Hall, 520-2802

Mass Communication: 310 St. Patrick's Building, 520-7408

Mathematics and Statistics: 4302 Herzberg Laboratories,  
520-2155

Mechanical and Aerospace Engineering: 3135 Mackenzie Building, 520-5684  
Medieval Studies: see Institute for Interdisciplinary Studies  
Music: A911 Loeb Building, 520-5770  
Philosophy: 2123 Dunton Tower, 520-2110  
Physics: 3302 Herzberg Laboratories, 520-4377  
Political Science: B640 Loeb Building, 520-2777  
Psychology: B552 Loeb Building, 520-2644  
Public Administration, School of: 1022 Dunton Tower, 520-2547  
Religion: 2121 Dunton Tower, 520-2100  
Social Work, School of: 509 Dunton Tower, 520-5601  
Sociology-Anthropology: B750 Loeb Building, 520-2582

Systems and Computer Engineering: 4462 Mackenzie Building, 520-5740  
Technology, Society, Environment Studies: 2249 Herzberg Laboratories, 520-4483  
United States Studies: see Institute for Interdisciplinary Studies  
Urban Studies: see Institute for Interdisciplinary Studies  
Visual and Performing Arts: see School for Studies in Art and Culture  
Women's Studies, Pauline Jewett Institute of: A812 Loeb Building, 520-6645



# Student Services

## Athletics and Recreation

Telephone: 520-4480

The mandate of the Department of Physical Recreation and Athletics is to enhance campus life, spirit, and health by providing a variety of opportunities for high-quality physical activity that meet the needs of students and staff. A balance of programs is offered for all skill and competitive levels, including freelance recreation, instruction programs, intramural sports, and interuniversity athletics.

The athletic facilities include an L-shaped fifty-metre pool with diving tower; a Fitness Centre with weight-training equipment, and cardiovascular machines; nine International squash courts; a double gymnasium; Fitness Studio; and Combatives and Multipurpose rooms. Outdoor facilities include football and soccer fields, three other playing fields, and five tennis courts. These facilities may be available to students either for recreational needs or for organised competition.

Instructional classes offered include group fitness programs such as aerobics, weight-training, and step aerobics; personal training services; fitness appraisals; aquatics programs such as learn-to-swim, aquafit, and masters' swim; dance; martial arts; yoga; and table tennis.

The intramural program includes golf, badminton, softball, touch football, soccer, volleyball, hockey, squash, pool, basketball, broomball, ball hockey, tennis, and snow football. Some of these activities are co-educational.

Carleton's Varsity teams for men (The Ravens) participate in basketball\*, football\*, rugby, soccer\*, swimming\*, waterpolo, cross-country skiing, and fencing. The University is a member of the Ontario Universities Athletics (OUA).

The women's Varsity teams (The Ravens) participate in basketball\*, volleyball\*, swimming\*, cross-country skiing, fencing, field hockey\*, rowing, soccer\*, and waterpolo. The University is also a member of the Ontario University Athletics (OUA).

There is an Athletics Board which advises the Department and the University on matters of athletics and recreation policy through the Office of the President. The Board is composed of members from the Faculty, Administration, Alumni, the Students' Association, and the Residence Association.

\*These teams also compete in the Canadian Interuniversity Athletic Union (CIAU) for National Championships.

## Awards Office

202 Robertson Hall  
Telephone: 520-3600  
Fax: 520-3560

Medals are the major academic awards granted by the University to its superior graduating scholars. They have no monetary value.

The Awards Office is responsible for the administration of undergraduate scholarship and bursary programs and loans for graduate and undergraduate students.

Scholarships are awarded on entry to the University and to those in course on the basis of superior academic performance. Applications are not required except for the top eight entrance scholarships. (See p. 438.)

Awards and prizes are awarded for excellence in particular areas of study. They may be cash awards or book prizes. Applications are not required.

## Administration of Awards

1. Students receiving scholarships and bursaries exceeding in total \$500, and which are under the jurisdiction of the University, will ordinarily be paid in two installments, one in October and one in January. The University reserves the right to withhold the payment of the second installment in cases where students do not meet the conditions of the award. Awards of less than \$500 will ordinarily be paid in one installment, in October.

2. Scholarship and bursary recipients who withdraw before the completion of their year will be expected to refund their bursaries or scholarships (or a portion thereof).

## Financial Aid for Students

### Bursaries

Bursaries are awarded to students who can show genuine need of financial assistance to meet their educational expenses. Students are expected first to make use of all resources available to them and to apply for government assistance.

Recipients for bursaries will normally be selected in December and February of each year, but applications may be considered at other times of the year in exceptional circumstances, if funds permit. An application, available in the Awards Office, is required for bursaries that are administered by Carleton.

## Government Aid Programs

### Ontario Residents

Canadian citizens or permanent residents who are residents of Ontario may qualify for assistance from the Ontario Student Assistance Program. The financial aid scheme is designed to supplement, rather than replace, family and/or student resources. In order to determine the additional funds required, the province objectively assesses the resources of the family and/or the student that could reasonably be used to provide for the student's educational costs. The assistance could be in the form of a Canada Student Loan and/or Ontario Student Loan. The maximum loan a student can receive in one academic year is usually the total amount of his or her allowable educational costs. Application forms and further information can be obtained by contacting the Awards Office at Carleton or the Student Awards Branch of the Ministry of Education and Training, P.O. Box 4500, Thunder Bay, Ontario P7B 6G9.

Students wishing to have applications processed in time for Fall registration must ensure that completed forms are submitted to the Awards Office by July 1.

### Residents of Other Provinces/Territories Except Quebec

Canadian citizens or permanent residents from the territories and all other provinces except Quebec may qualify for assistance from the *Canada Student Loans Plan* through their home province. The maximum loan available per academic year is currently \$165 a week. The loan is interest free while the student is enrolled in a 60 percent course load. Some provinces also make available non-repayable grant assistance along with this federal loan.

The Awards Office disburses general information on the various provincial aid schemes but application forms and details on individual programs must be obtained from the authorities in the



home province. Deadline dates vary but, generally speaking, it is wise to apply for financial assistance through the appropriate provincial department before June 30.

#### **Quebec Aid**

Deadline dates for submission of applications are: June 30 or within 45 calendar days of the date indicated on the offer of admission from the University.

#### **Part-Time Students**

Solely for purposes of federal/provincial financial aid schemes (except Quebec), part-time students are classified as those enrolled in fewer than 3.0 full-credit courses. These students are advised to contact the Awards Office for information on the availability of financial aid for part-time study.

## **Bookstore**

Telephone: 520-3832

The University Bookstore, located in Southam Hall, stocks required textbooks and offers a wide selection of scholarly and general books. A complete line of school supplies and insignia clothing and gifts is also available.

Bookstore hours are: Monday through Thursday, 9:00 a.m. to 7:00 p.m., Friday 9:00 a.m. to 4:30 p.m. Hours are subject to seasonal changes and will be posted at the Bookstore entrance. Customers are urged to call ahead if they are not clear on the hours.

The Bookstore's refund/exchange policy requires merchandise to be returned within 48 hours of purchase. There is an extended refund period at the beginning of each term. Customers are urged to review the policy before making a purchase. The cash register receipt is required for any refund or exchange.

## **Career Services**

508 University Centre

Telephone: 520-6611

Fax: 520-5695

Career Services (CS) is the on-campus student employment centre. Services provided by this office include:

#### **Job Postings**

Part time, summer and internship jobs are posted on the self-service job boards within the office. Full time jobs are posted in job binders located in the reference library. Students may also access the Job Bank, situated on the 4th floor of the Unicentre, to search for jobs posted by Human Resources Development Canada. CS also provides computer work stations for students to access electronic job search methods such as the National Graduate Register and Campus WorkLink.

A selection of jobs available appear on our homepage and in our Charlatan ad, which runs every second week during the fall and winter terms. Copies of the ad are circulated to departments on campus for posting. A detailed description of employment activity, processed by our office, is published in our Employment Bulletin. The bulletin is posted in a glass case outside the office.

#### **On Campus Recruiting**

Employers from both the private and public sectors visit Carleton University to recruit graduating students for permanent employment opportunities which are available at the end of the academic term. Positions advertised through the program are of a professional nature. Students seeking employment through the On-Campus Recruitment Program must be in their graduating and final year of studies at Carleton University. The recruiting season takes place during both the fall and winter terms. On-Campus Recruiting job postings are also advertised through our Charlatan ad and the Employment Bulletin.

## **Alumni Referral Service**

The Alumni Referral Service is for new and recent Carleton graduates. It is based on informing qualified Carleton alumni, registered with our service, of immediate job openings. All positions are also posted in the full time job binders in the reference library.

Students may register for the Alumni Referral Service one month prior to completing their degree requirements and may continue to register and participate in the service for up to three years after graduation. You do not have to be unemployed to be eligible for the service, but you must be sincerely and actively looking for a job.

## **Career and Employment Counselling**

Career and educational counselling involves learning to plan wisely, handle difficulties and make decisions with regard to academic and career concerns. Relevant information generated by group discussion and testing is used in helping the client to determine goals and make choices. As well, group workshops, dealing with employment issues, are held on a weekly basis on resume writing/cover letters, interview techniques and job search/networking skills. Register to attend by signing up with our reception staff.

## **Career Fair**

Career Services hosts an annual Career Fair early in October. Employers from both the private and public sectors visit the campus to answer student inquiries and raise awareness of permanent job opportunities and career possibilities. The Career Fair date, time and location will be advertised in our September/October Charlatan ads.

## **Summer Job Fair**

During the last week in January or first week in February, Career Services hosts a Summer Job Fair. Various employers participate in the job fair to advertise their summer employment opportunities to all students currently enrolled in full time or part time studies. The Summer Job Fair will also be advertised through the Charlatan ad.

## **Resource Centre**

A resource centre is available for use in educational, employment, and career planning. It includes: occupational materials, university and community college calendars, employer literature, company videos, job search materials, newspapers, business periodicals, occupational and labour market trends, work abroad information, salary information, telephone books from other cities across Canada, and information on various associations. Information about other sources of assistance at Carleton and in the greater Ottawa community is also available. There is a library of materials that are available on a loan system.

## **Carleton University Students' Association**

University Centre 401

Telephone: 520-6688

Fax: 520-3704

The Carleton University Students' Association (CUSA) is an incorporated, student-run organization that promotes the interests of the student body. All registered full or part-time undergraduate students are members of CUSA.

CUSA represents the students' interests to all levels of government and administration. It is also a member of the Canadian Federation of Students (CFS) and CFS-Ontario. These two organizations are committed to bringing about necessary educational, administrative and/or legislative changes in those areas affecting students.

Student services funded wholly or in part or operated by CUSA include: Career Services (by direct student levy); Carleton Disability



Awareness Centre; Carleton Foot Patrol; Gay, Lesbian, Bisexual and Transgendered Centre; Information Carleton; International Students' Centre; Mature and Part-time Students' Centre; New University Government; Off-Campus Students' Lounge; Photo Centre; Womyn's Centre; and the Volunteer Centre.

CUSA business ventures include: Oliver's Pub and Patio; Rooster's Coffeehouse; Unicentre Store; and a Canada Post outlet.

The legislative body of CUSA is a 34 member Students' Council made up of representatives from each faculty and a President and Finance Commissioner who are elected annually by the student population. Elections take place in February. The term of office is twelve months commencing the following May.

CUSA also sponsors more than 100 clubs and societies, alternate education programs, speaker series, and concerts.

The Students' Association is continually working to improve and expand its scope of activities. Students are encouraged to communicate ideas and opinions to members of their elected representatives in CUSA, to participate and become actively involved in the activities of the Association, and to exercise their voting privileges.

## The Chaplaincy

Protestant-Ecumenical Chaplaincy

T28, T30 Tory Tunnel

Telephone: 520-4449

*Chaplain*, Neil Hunter

Roman Catholic Chaplaincy

127G University Centre

Telephone: 520-2896 or 520-2590

*Chaplain*, Father Don Maclellan

*Assistant Chaplain*, Deacon Derek G. Smith

For over three decades a chaplaincy service has existed at Carleton. Part of its function is to share experiences, insights, friendships and our faith. We are also involved in study and discussion groups, community projects, development education, marriage preparation and religious services. In addition, we have connections with many organizations and resources on campus as well as with churches and religious groups in the Ottawa area.

The two principal chaplains (Protestant-Ecumenical and Roman Catholic) are supported by a number of people in the Chaplaincy offices, which are open most days. Appointments are not necessary but at times they are advisable. People are encouraged to visit the offices at any time.

Next to the offices in the Tory Tunnel there is a Quiet Room, which is used for individual meditation, religious services (times posted), and prayer group activity. It is open all day, five days a week. Check with the Chaplaincy office regarding special services.

## Colonel By Child-Care Centre

Telephone: 520-2715

Fax: 520-3992

Colonel By Child Care Centre has been providing non profit Child Care on the Carleton University campus for over 20 years. Qualified teachers care for 57 children between the ages of 6 months and 5 years. The Centre operates twelve months a year, Monday to Friday from 8:00 a.m. to 5:45 p.m. Fee subsidies from the Regional Municipality of Ottawa-Carleton are available for families who meet the criteria.

As there is a waiting list, parents are encouraged to apply as early as possible.

For further information, please contact Margot Henderson.

## Computer Store

Telephone: 520-3699

The Computer Store, located in Southam Hall, carries a full range of computer products, (including Apple, IBM, NEC Bell, and Compaq computers, printers, modems, software and other peripherals) at very competitive prices, for students, faculty and staff.

Store hours:

Monday to Thursday

9:00 a.m. - 5:00 p.m.

Friday 9:00 a.m. - 4:30 p.m.

Closed weekends and statutory holidays.

Summer hours are posted at the entrance.

## Computing and Communications Services

401 Robertson Hall

Telephone: 520-3700

A wide range of computer services are available to students. There are several Sun systems running Unix, as well as a number of microcomputer networks. All students are eligible for accounts on the CHAT system, an electronic communication system for e-mail, course discussion groups and Internet access. Also, all students have access to word processing spreadsheet and database software as well as laser printing facilities and CD-ROM services at the microcomputer labs on campus. Student Consultants are available at the microcomputer labs during peak times.

Comprehensive data analysis packages such as SAS, SPSS, Maple, Mathematica and Matlab are available for general research applications. Complete information about computing on campus is available on the web, see <http://www.carleton.ca/ccs>.

For information or assistance, please visit the CCS Help Desk in 401 Robertson Hall or call 520-3700. Handouts on various computing topics are available for pick up.

## Health Services

Suite 2600

Carleton Technology and Training Centre

Telephone: 520-6674

Web page: <http://www.carleton.ca/health>

Health Services offers comprehensive health care for the entire community at Carleton University (students, staff and faculty). In the event of illness or other health related concerns, we have a professional staff of physicians, psychiatrists, nurses, counsellors and other support staff sensitive to the special needs of the community. When necessary, appropriate referrals are made to Health Practitioners in the community. Confidentiality is respected at all times. Medical records will not be released without the patients' permission. Health Services provides consultation, treatment and advice on matters of health, and ascertains the fitness of students to perform academic work.

Our hours are from 8:30 a.m. to 4:30 p.m. (May - August) and 9:00 a.m. to 6:00 p.m. (September - April). For an appointment please call 520-6674. After-hours medical services are available from Holland-Carling After Hours Clinic located at 476 Holland Ave., (at Carling), phone 722-9689. When you call to book an appointment please identify yourself as a Carleton student.

Psychiatrists are available on a referral basis for those requiring psychiatric assessment or care. The services provided are available to all students of the University, and are covered by provincial health insurance.

Counsellors are available to see students on a self-referral basis. Personal counselling can help individuals deal more effectively with emotional and social concerns.

A Health Education Program, promoting healthy lifestyles and wellness, offers on-going workshops presented by trained student peer educators. Topics include, but are not limited to, nutrition, alcohol, sexuality, stress management and smoking



cessation. For more information, call the Health Educator at 520-6676. Health Insurance

### 1. Ontario Students

Carry your health insurance number with you at all times. If you do not have one, application for coverage must be made directly with the Ministry of Health at 75 Albert Street in Ottawa.

### 2. Students from Another Province

If you are from outside of Ontario, check that your health insurance is active and carry your number with you at all times. We don't bill you, we bill your provincial insurance plans directly.

### 3. Students from Outside Canada

The University Health Insurance Plan (UHIP) is compulsory for all international students upon registration. Further information regarding UHIP may be obtained from the foreign student advisor, the International Student Centre or Carleton International.

If you do not have any health insurance, you may be billed for services rendered. The University may withhold the marks of students with outstanding accounts.

## Immunization Record

It is recommended that new students:

1. Check with your family physician to ensure adequate immunization. An updated tuberculin skin test is recommended.
2. Obtain documentation of vaccination to red measles, German measles, mumps, polio and tetanus from your family physician. A booster dose of measles/mumps/rubella vaccine is recommended if you have not been re-immunized since infancy.
3. Discuss Hepatitis B vaccine with your family physician. The Medical Office of Health for Ottawa-Carleton region strongly recommends it for all adolescents and young adults.

## Ombuds Services

511 University Centre  
Telephone: 520-6617

Jim Kennelly  
University Ombudsperson

Ombuds Services deals with a variety of grievances and complaints as well as with requests for information. A few examples of the on-campus and off-campus problems include academic appeals, graduation appeals, fee disputes and human rights issues. Financing of this service is provided equally by the University and the Students' Association (CUSA).

## Paul Menton Centre for Persons with Disabilities

500 University Centre  
Telephone: 520-6608  
TDD: 520-3937  
Fax: 520-3995  
WWW address: <http://www.carleton.ca/pmc>

*Director* - Larry McCloskey  
*Co-ordinator, Learning Disabilities* -  
Nancy McIntyre  
*Learning Specialist* - Diane Proulx  
*Co-ordinator, Physical Disability Programs* -  
Dean Mellway  
*Co-ordinator, Attendant Services* - Matthew Cole

## Academic Accommodation

Carleton University has a Senate-approved policy on Academic Accommodation (see p. 32). This policy promotes reasonable efforts to accommodate students with disabilities so that they will have the opportunity to meet learning objectives and be fairly evaluated in their performance. The University is strongly committed to providing reasonable access and reasonable accommoda-

tion for all individuals with identified and duly assessed disabilities. In no case, however, does academic accommodation negotiate away, lower or remove the academic standards and learning objectives of any course or program at the University.

## Publications

A series of brochures and flyers on resources and services available to students with disabilities at Carleton University may be obtained from the Paul Menton Centre free of charge. Information is also available on the website.

## Requests for Service

The Paul Menton Centre provides individualized support services, based on appropriate and up to date documentation, to persons who are deaf or hard of hearing, with learning disabilities, attention deficit disorder (ADD), visual impairments, head injuries, physical disabilities including mobility impairments, or who have psychiatric or other medical disabilities. The Centre accommodates as many requests as resources permit.

Students are responsible for applying for special services by making an appointment with the appropriate coordinator. All requests will be considered on an individual needs basis. Students are advised to come to the Centre early in the term to discuss service requests.

## Examination Accommodations

Examination accommodations for all tests and examinations (in-class, itv, or formally scheduled) must be arranged by specific deadline dates. Please refer to the Paul Menton Centre for a list of deadlines for all examinations. Accommodation requests not made prior to the specified deadlines will not be fulfilled.

## Library Services for Students with Disabilities

Students referred by the Paul Menton Centre have access to the Joy MacLaren Adaptive Technology Centre, located on the main floor of the MacOdrum Library, Room 232. Heather Cross, Coordinator of Library Services for Students with Disabilities, is located in the department of Reference Services, Room 206 (520-2600, extension 8186). Students are advised to contact her for a complete list of services available in the Library including use of the Centre, research assistance, stacks retrieval, assistance with photocopying, and reserves assistance. Services at the University of Ottawa for students with disabilities are also available to Carleton students. Students must obtain a letter of referral from Heather Cross for each academic year to have access to services at the University of Ottawa.

The Library's contact for transcription services is Margaret McLeod of the department of Reference Services (520-2600, extension 8943). Students referred by the Paul Menton Centre are registered with the W. Ross MacDonald School, the provincial agency which provides texts and other course related material in alternative formats for students with a print disability. For tapes that must be borrowed from Recordings for the Blind, there is a lifetime registration fee of \$50 (U.S.) plus a \$25 (U.S.) annual fee. Requests can take up to four months to process, therefore, requests should be made as early as possible.

Students may scan text using the Reading Edge, a reading machine, and have the scanned material recorded onto audio tape or downloaded onto a disk. This machine is housed in the Joy MacLaren Adaptive Technology Centre.

## Assistive Technical Devices

A limited number of portable computers, two and four-track tape recorders, and personal FM systems are available for loan. Written referral by a Paul Menton Centre Coordinator is required.



## **Students who are Blind or Visually Impaired**

In the Joy Maclaren Adaptive Technology Centre in the MacOdrum Library, students who are blind or visually impaired have access to Zoomtext Plus, two Telesensory colour SVGA Close Circuit TVs, the Dectalk voice synthesizer, the Vocal-Eyes screen interface software, a Reading Edge machine and the SlimVoice speech synthesizer.

## **Students who are Deaf or Hard of Hearing**

It is the student's responsibility to initiate early enquiries. If specialized equipment or services, such as personal FM systems or sign language interpreters, are required, please contact the Centre at least a month prior to the start of classes. The Centre acts as liaison for agencies which may provide funding for various services. Early enquiries are required to access these services.

## **Students with Learning Disabilities**

It is required that the student have a recent psychoeducational assessment available which has been administered after the age of 16 or within three years of initial registration at the Paul Menton Centre. This will allow Paul Menton Centre staff to organize services that address each individual's particular learning disability.

## **Students with Attention Deficit Disorder (ADD)**

To receive accommodation, students with ADD are required to have formal identification from a psychiatrist, psychologist or physician. For further information contact the Paul Menton Centre.

## **Students with Mobility Impairments**

The campus of Carleton University is well equipped for accommodating persons with physical disabilities. The buildings are in close proximity to each other and most are connected by tunnels. All of the main buildings have elevators and are ramped for outside entrance and egress. Most sidewalks have been made accessible by curb-cut renovations. A building-by-building accessibility inventory is available from the Centre or on the website.

## **Students with Non-Visible Disabilities**

Students with non-visible disabilities may have legitimate needs which are not easily recognized or understood within the University community. Students with psychiatric or medical disabilities may wish to contact the Paul Menton Centre to discuss personal or academic issues of concern to them. Appropriate documentation is required.

## **Residence Attendant Services Program for Students with Disabilities**

The Residence Attendant Services Program offers 24 hour assistance with activities of daily living such as personal care, room chores, cafeteria assistance, etc. The program is available to students with various levels of disability and attempts to respond to individuals according to their specific needs. In order to provide comprehensive services only a limited number of program spaces are available each year. A guide describing the program in detail is available free of charge by contacting the Attendant Services Co-ordinator at 520-6615.

For students who need an accessible room in residence but do not require attendant services, a limited number of rooms are available based on the following criteria: the need for special accommodation, level of disability, whether the applicant has housing alternatives in the area, and the date of application. For further information contact the Accommodations Officer in the Department of Housing and Food Services at 520-5612.

## **Race Equity Office**

2209 Dunton Tower  
Telephone: 520-5645

Co-ordinator  
Dr. Edward Osei Kwadwo Prempeh

Carleton University is host to students from various racial, cultural and ethnic backgrounds. The University has a well-established reputation for its commitment to excellence in diversity, and the Race Equity Co-ordinator works collaboratively with a wide range of students, faculty, staff and senior administrators to promote diversity as an institutional value and develop campus-wide educational programs to assist in broadening their knowledge and sensitivity to cultural and racial diversity.

The Office deals with complaints of racial discrimination and harassment and provides a confidential advisor service to complainants. The Office also offers workshops on topics such as employment and educational equity, 'chilly climate', and racism. These workshops are available to campus groups, student organizations, departments, classes, or by request.

## **Raven Corner**

Raven Corner, located in the Physical Recreation Centre, offers a varied assortment of athletic and casual clothing for both men and women. Raven Corner also carries a selection of sports accessories for swimming, racquet games and weight training.

## **Status of Women**

2201 Dunton Tower  
Telephone: 520-5622  
Fax: 520-4037

9:00 a.m. to 4:00 p.m. (Evening appointments are available)

Co-ordinator  
Nancy Adamson

The University established the position of Status of Women Co-ordinator to facilitate structural changes to address women's issues.

The Co-ordinator identifies priority issues of various groups of women on campus and lobbies for changes that will improve their status. Some of these are childcare, sexual harassment, personal and campus safety, date rape and sexual assault, racism, lack of accessibility, sexism, employment and educational equity, and chilly climate. The Co-ordinator also offers confidential counselling, information and referral to individual students, staff and faculty to resolve specific issues.

## **Student Housing and Food Services**

261 Stormont House

### **Residences**

Telephone: 520-5612  
Fax: 520-3952  
Email address: accommodations@carleton.ca

The staff of the Department of Housing and Food Services strive to enhance the University experience by providing support and various services to the 1,666 students living in the residence community. This includes developing and promoting programs which respond to the academic objectives and developmental needs of residence students. The live-in Residence Life staff are active in contributing to the educational, cultural, and social growth of the students in their houses.

The residences are located on campus and close to classrooms, the library, and other University facilities. The underground tunnel system makes travel to other University buildings easy in all seasons. Each residence building is provided with T.V. lounges, study areas and laundry facilities. Students' rooms are equipped to



meet the basic needs of students, including individual Ethernet access to existing computer systems at Carleton University, including CHAT and the World Wide Web. (additional cost for hook-up)

Students of the University are eligible to apply to live in residence, with first-year students with a high school leaving average of 70 percent or better being given preference. The residence contract covers the period from September through the Spring examinations, except for a short period at Christmas when the majority of the facilities are closed.

The Residence fee includes provision of a meal plan, in which all students must participate. There are three available meal plans: Plan A which provides 14 meals per week (lunch and dinner) or Plan B which provides 12 meals per week and a cash component of \$300 to be spent at any University-operated food outlet. Plan C provides 9 meals per week (lunch, and dinner) and a cash component of \$750.

To receive a residence application form, students new to Carleton should indicate on the University application that residence is desired. Residence materials and detailed information are sent to students concurrently with the offer of admission to full-time study at Carleton. There are a number of accessible rooms in residence available for students with disabilities - the minimum requirement of credits that the student must be enrolled in is the equivalent of two full credits. For further information, please see "Resident Attendant Services Program for Students with Disabilities." (See p. 28.) Students who are currently registered at Carleton need only visit the Student Housing Office to obtain an application for residence. For further details about residence services or procedures, students should contact the Department of Housing and Food Services.

### Off-Campus Housing

Telephone: 520-5614

The Off-Campus Housing Service is designed to provide assistance in finding suitable accommodation to students who cannot be accommodated on campus or who are interested in off-campus housing. This service mainly operates on a self-help basis, with listings of accommodation posted outside 261 Stormont House for viewing 24 hours per day, seven days a week. During normal office hours, staff members are pleased to assist with information, advice, etc. In addition, the Off Campus Centre operates from 9:00 a.m. - 4:00 p.m. during the months of July and August. Staff of the Centre provide personal assistance and further information.

Details regarding each listing include rates and amenities provided. The University does not undertake to inspect or approve any of the facilities listed, so it is strongly advised that the search be undertaken in person. The listings can also be viewed on any terminal having access to the University mainframe by typing the word HOUSING after the "enter class" prompt appears.

In addition, a newsletter titled "Faculty and Staff Listing" is published on the 15th of every month. (Deadline for submissions is the 13th.) This lists accommodations of staff members going on sabbatical leave for periods ranging from four months to two years. Lists are distributed to each department on campus and are available on request.

### Food Services

Telephone: 520-5612  
Beaver Foods: 520-5618

A-la-carte food service is available in eight locations across campus:

*The Food Court offering Mr. Submarine, Taco Bell, Harvey's, Second Cup, Market Grill and Domino's Pizza*, second level, University Centre;  
*Robin's Donuts*, first level, University Centre;  
*Rooster's Wing*, fourth level, University Centre;  
*The Fit Stop*, first level, Physical Recreation Centre;  
*The Loeb Café*, first level, Loeb Building;

*The Second Cup*, Library precinct, Tunnel level;  
*The Oasis Cafeteria*, first level, Residence Commons;  
*The Bent Coin*, fifth level, Robertson Hall

In addition, "all-you-care-to-eat" lunch and dinner is available in the Residence Dining Halls, 3rd level Residence Commons for the price of admission. Students with Campus Cash plans are entitled to reduced prices and tax exemption where permitted.

Vending machines provide off-hour service. Students with Campus Cash plans can make cash purchases without using cash from many of these machines.

A variety of Campus Cash plans and Campus Meal plans are available to students offering savings on campus food purchases through both discounts and tax exemptions.

"Care Packages" provide an easy means for friends and families to send birthday cakes, exam study snacks, or celebrate other special occasions with a food treat.

The catering division of food services is equipped to provide banquet services, receptions, party trays or beverage service for groups of up to 800 guests.

### Tour and Conference Centre

Telephone: 520-5611  
Fax: 520-3952

Each year from May to August, the Housing and Food Services Department operates a successful Tour and Conference Centre. Residence facilities accommodate up to 1,400 guests. A wide range of services including accommodation, catering, meeting rooms, lecture theatres, all at very reasonable rates, are available to conferences and tour groups.

Accommodation is also available to short-term summer visitors, including students and their families, who wish to attend or participate in such University functions as Convocation and first-year student Welcome programs. Long term summer residence (four to six weeks) can be reserved in conjunction with one of four available meal plans.

Arrangements for special functions such as wedding receptions, banquets, parties (large and small) and meetings or other special events are also co-ordinated by the Tour and Conference Centre. Such events may be booked throughout the year.

For further information please contact the Tour and Conference Centre.

### Student Life Services

501 University Centre  
Telephone: 520-6600

Student Life Services offers a wide range of programs and services to assist students in their adjustment to academic life, in improving their learning skills, and in making decisions with regard to academic and career concerns.

Office hours are from 9:00 - 5:00 pm. For further information about services and programs contact the centre in person or call 520-6600. Please visit our website at [www.carleton.ca/counselling/](http://www.carleton.ca/counselling/)

### Campus Life Program

The main goals of campus life programming is to assist new students in a variety of areas (e.g. academic, social, emotional) thereby easing the transition to life at Carleton University. In addition to orientation activities, services and programs are offered throughout the year to introduce students to the many resources available on campus and to get students involved. The Campus Life Coordinator is also available to discuss student concerns about adjustment issues and motivation.

### Study Skills Program

The Study Skills Program coordinates a series of courses which begin in early September including Rapid Reading, Essay Writing,



Oral Presentations, as well as general Study Skills workshops covering note-taking, time management, and exam preparation. These are offered in small groups to accommodate discussion and interaction, and participants have access to individual follow-up if needed. Drop by to register in advance for the workshops.

For individual assistance in a specific study skill area, see the Study Skills Coordinator during office hours. Free brochures on topics such as time management, active reading, note-taking exam preparation, and study skills for *ltv* students are available. A variety of study skills videotapes are also available through Instructional Media Services.

### **International Student Advisory**

The International Student Adviser is available to discuss particular concerns international students may have. An orientation program is held every August and January for incoming international students. Information and assistance concerning university education, financial assistance, health coverage UHIP, immigration regulations and the general adjustment to a new living situation are available. Please call for drop-in and appointment times.

Student Life Services is also responsible for Career Services (see p. 25) and the Paul Menton Centre for Persons with Disabilities (see p. 27).

## **University Centre**

The University Centre (Unicentre) is a non-academic, student-oriented building which serves as the hub of the campus. It is home to the Carleton University Students' Association and virtually all of its operations (i.e. coffeehouse, pub, convenience store). Its location and atmosphere makes it the perfect meeting place and an ideal setting for events of interest to all students.

In addition to housing CUSA services, the Unicentre is home to: Student Life Services, Information Carleton, Ombuds Services, the Graduate Students' Association, a division of the Ontario Public Information Research Group, and the Paul Menton Centre. Porter Hall, which is available for both on- and off-campus groups to rent, is also located within the Unicentre.

For a more complete list of the services available, please see the section entitled Carleton University Students' Association. (See p. 25.)

## **Writing Tutorial Service**

The Writing Tutorial Service offers individual and small group tutorials to students who want advice on the writing of university essays. The tutors provide practical instruction on all aspects of the writing process from the initial research and data-gathering, to the exploration and organization of ideas, through to the final preparation of the manuscript. In addition, the service regularly presents workshops on the general principles of essay writing at the request of Faculty and/or Teaching Assistants. The service is offered free of charge to all Carleton students, part-time and full-time, graduate and undergraduate. For an appointment or information, call 520-6632 or visit 215 Paterson Hall from 9:00 a.m. to 4:00 p.m., Monday to Friday.

# Alumni Association

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510 Robertson Hall  
Telephone: 520-3636  
Fax: 520-3587

E-mail: [devalum@carleton.ca](mailto:devalum@carleton.ca)  
Web address: <http://www.carleton.ca/alumni>

The Carleton University Alumni Association represents the over 70,000 graduates of Carleton University. Membership is automatically extended to all graduates, and is available, upon request, to former students who have completed 5.0 credits but are no longer registered at Carleton.

The objectives of the association are to advance the excellence and prestige of Carleton University as a distinguished institution of higher learning in Canada, and to encourage a spirit of loyalty, friendship, service and benevolence among the members.

The alumni association serves the University by promoting its well-being through contact with graduates, government, the public, faculty, students and potential students. Its members are actively involved in various advisory boards and recruiting activities. It is governed by the National Alumni Council, a volunteer group comprised of branch and chapter representatives and committee chairs.

All graduates with known addresses receive the *Carleton University Magazine* three times per year. The Department of Development and Alumni Services maintains alumni records to ensure a meaningful and continuing dialogue between alumni and the University.

The alumni association sponsors Homecoming, reunions, an alumni awards program, and various branch and chapter activities. The association offers services to alumni including life, automobile, and home insurance, an affinity MasterCard, diploma framing, and specially-labelled wine.

Funds from alumni help to support student awards and other specific projects.

## Members of the Alumni Council for 1998-99:

Michael Makin, BJ/86, (President)  
Jennifer Higgins-Ingham, BA/89, BAHons/92, (Vice-President)  
Patrick O'Reilly, BCom/92 (Vice-President)  
Gail Larose, BAHons/69, MA/70, (Past-President)  
Tom Anzai, BCom/84  
Rick Breen, BA/87  
Paul Brown, BA/89  
Gerard Buss, BA/73  
Paul Correy, BEng/74  
Liz Czanyo, BAHons/88  
Derek DeLeon, BA/94  
Christine Fisher, BAHons/75, MA/77  
Stephen Fretwell, BA/89  
David Gerrior, BA/83  
Mark Giberson, BJ/84  
Maxine Grier, MA/91  
Cathy Hanan, BJ/96  
Sherri Kashuba, BCom/87  
Ian Kenney, MA/96  
Michelle Landreville, BA/84  
Michael Lanos, BA/86  
Brigitte Leitgeb, MA/93  
Trevor Lewis, BAHons/95  
Daniel Lin, BEng/87  
Alan Macartney, BA/84  
Maria McClintock, BA/86  
Christopher Mueller, BCom/95  
K.G. Nesbitt BA/96  
Kyle Nunas, BJ/94  
Tomas Oliva, BA/85  
Celia Quigley, BAHon/90  
Stew Ross, BCom/78  
Phil Rourke, MA/89  
Lisa Smith, BCom/91  
Pat Stoqua, BA/81  
Dave Thomson, BCS/86, MCS/93



# Admission Requirements and Procedures

315 Robertson Hall  
Telephone: 520-3663

## General Admission Requirements

Persons wishing to follow programs of study leading to a degree or certificate must be formally admitted to the University.

Persons wishing to register in degree-credit courses without having been formally admitted to the University may do so as Special students. (See p. 61.)

Minimum entrance requirements vary from program to program. Applicants should note that meeting the minimum requirements of a program does not guarantee them admission to the University. Applications from students whose grades do not meet the requirements in a given year or program will be considered individually. Students in this category may be asked to provide additional information to assist the University in determining where there are special circumstances that would permit their admission to Carleton.

This publication contains admission requirements for the 1998-99 academic year only. Students wishing to apply for 1999-2000 should contact the Office of Admissions for information on requirements and procedures.

Individuals who are in any doubt about their eligibility for admission are encouraged to enquire at the Office of Admissions.

## Accessibility for Students with Disabilities

Carleton University is committed to making reasonable accommodation to individuals with disabilities, and actively encourages application from students with disabilities. This commitment includes gaining an understanding of the circumstances of an individual's disabilities and to adjusting services to all academically qualified individuals to compete on an equitable basis.

Students are encouraged to contact the Paul Menton Centre for Persons with Disabilities for further information to enable them to assess the extent to which specialized services will be available.

Academic accessibility is intrinsically linked to physical accessibility. Carleton is committed to continually monitoring and upgrading physical accessibility to whatever extent is possible.

A Standing Committee of Senate monitors the needs and problems of students with disabilities in conjunction with their academic problems and makes recommendation for improvements.

(See Student Services, Paul Menton Centre for Persons with Disabilities, p. 27.)

## Multiple Undergraduate Programs

Students who already possess an undergraduate degree, certificate, or diploma from another university or from Carleton University, may apply for admission to a second undergraduate program. In such circumstances, the minimum requirement will be 5.0 additional credits, at least 3.0 of which must be in the area of specialization of the new program. For a second or subsequent undergraduate program, the appropriate residence requirement must be met. (See p. 47.)

## English Language Requirements

1. International applicants and Canadian citizens and residents who do not meet the requirements in 2 or 3 below are required to

complete an approved assessment of English as a Second Language administered by the University's School of Linguistics and Applied Language Studies. Depending on the results of this assessment, and based on the recommendations of the School, these applicants may be:

- a) admitted to a degree program without further English as a Second Language Requirements; or
- b) admitted to a degree program in which they will be required to complete the English as a Second Language Requirement. Such students will be permitted to register for a program of either full- or part-time studies, to include one or more credit courses in English as a Second Language beginning in their first term of study; or
- c) permitted to register as Special (non-degree) students on the condition that they enrol in appropriate credit English as a Second Language courses; or
- d) permitted to register in non-credit intensive English as a Second Language courses offered by the School.

To satisfy the English as a Second Language Requirement, students must earn a grade of B- or better in either Advanced ESL 21.190 or 21.195. Alternatively, students may satisfy this requirement by achieving a score of 580 or better on the TOEFL, or by achieving a Regular (R) placement category on the Carleton Academic English Language (CAEL) Assessment.

2. In order to be eligible for admission without an English as a Second Language Requirement to a degree program at Carleton University, all international applicants and Canadian citizens and residents whose first language is not English or French are required to:

- a) present a minimum score of 580 on the Test of English as a Foreign Language (TOEFL); or
- b) present transcripts to indicate that they have studied for the last four years in a Canadian secondary school, in which the language of instruction is English.

3. Applicants whose first language is French must present transcripts to indicate that they have taken four years of Anglais in a Canadian secondary school in order to be admitted without an English as a Second Language Requirement.

Students are expected to complete the English as a Second Language Requirement within one calendar year of their initial enrolment in credit courses. In exceptional circumstances, permission to continue into a second Fall/Winter term registration in ESL courses may be granted by the appropriate Registrar (in consultation with the School of Linguistics and Applied Language Studies). Subsequent registration will be denied to students with the English as a Second Language requirement if the requirement has not yet been met and if they do not show both continuous enrolment and continuous progress in ESL courses (as determined by the School of Linguistics and Applied Language Studies).

For further information regarding the English as a Second Language Requirement and admission contact the Office of Admissions.

## Dates of Entry

Students may be admitted to register in January, May and July as well as in September. (See p. 12 for details on the Academic Year.)



It should be noted however, that a full range of courses is only offered during the Fall/Winter session, i.e. September to May.

### Levels of Entry

Students may be admitted to Qualifying-University year, First- or upper years depending upon academic qualification. When a student is admitted at the Qualifying-University year level, an Honours degree program is normally five years in length (i.e. Qualifying-University, First, Second, Third, Fourth) and a B.A. degree program is normally four years in length (i.e. First, Second, Third). When a student is admitted at the First-year level, the degree program is normally four years for an Honours degree and three years for a B.A. degree. Beyond First year, remaining degree requirements are determined by the total number of credits required for that particular degree program less those credits granted on transfer from previous post-secondary studies.

It should be noted that students who are being considered for admission to the Qualifying-University year level may, at the time of admission, receive credit for work completed at that level in the Canadian high school system.

### Concurrent Studies

The Concurrent Studies program enables Secondary School students to begin University-level study while completing any outstanding requirements for their high school diploma. The availability of the Concurrent Studies program will be of particular interest to those students in semestered schools who are not taking a full load of high school credits in their final year of study. Students in non-semestered high schools may also wish to take advantage of this opportunity in their final year if they are not taking a full credit load.

Students who wish to take advantage of the Concurrent Studies program will register as Special students. Special students are permitted to take up to 2.0 approved First-year credits in the Fall/Winter Session and 2.0 approved First-year credits in the Summer Session. With admission to a degree program, program requirements for a degree will be reduced by the number of credits successfully completed as part of the Concurrent Studies program that are appropriate to the degree. Other universities normally grant credit on admission for courses taken at Carleton as a Special student.

### Accelerated Progress

Exceptional students who are entering Carleton's Qualifying-University year will be interested in the accelerated progress policy. This unique policy is designed to enable very capable students to proceed towards a degree at a rate commensurate with their ability in university work.

Above-average performance is rewarded with a reduction in credit requirements. For example, in an Arts or Science program, the maximum reduction possible under this policy could result in a student obtaining a degree in three years beyond Grade 12. Detailed requirements are shown in the Calendar entries for faculties.

### Qualifying-University Year

This program is offered in the Bachelor of Arts, the Bachelor of Engineering and the Bachelor of Science programs. Students interested in other undergraduate degree programs must first complete an appropriate Qualifying-University year program in Arts, Engineering or Science. (See Summary beginning on p. 41.)

### Certificate Programs

In addition to offering thirteen undergraduate degree programs, for which the admission requirements are stated on the following pages, Carleton offers six certificate programs, as follows:

### Certificate in English Language and Composition

#### Admission Requirements

A university degree or teaching certificate. This is an in-service certificate intended primarily for practising teachers, in order to upgrade their knowledge of those areas of language and of writing theory that underlie the Ontario guidelines and support documents.

Refer to p. 237 for program details.

### Certificate in Public Service Studies

#### Admission Requirements

The basic admission requirement is the completion of the OSSD including six OACs, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Admissions, p. 62).

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits, including all core courses, for the Certificate at Carleton University. Students who have completed an undergraduate degree are not eligible for admission to this program.

Refer to p. 395 for program details.

### Certificate in the Teaching of English as a Second Language

#### Admission Requirements

Applicants are admitted on the recommendation of the School of Linguistics and Applied Language Studies. Applicants must have either completed a first degree or be registered in a B.A. (Honours) program (in any discipline) at Carleton University.

Refer to p. 319 for program details.

### Certificate in Law Enforcement Studies

#### Admission Requirements

The basic admission requirement is the completion of the OSSD including six OACs, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Students Admissions, p. 62).

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits, including all core courses, for the Certificate at Carleton University.

Refer to p. 316 for program details.

### Certificate in French Language Studies

#### Admission Requirements

The basic admission requirement is the completion of the OSSD including six OACs, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Admissions, p. 62).

Candidates are required to take French Placement before entry into the program. Depending on the results of the French Placement procedure, candidates may be required to complete one or more prerequisite French courses before taking any required certificate courses.

Refer to p. 255 for program details.

### Certificate in French Translation Studies

The basic admission requirement is the completion of the OSSD including six OACs, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Students Admissions, p. 62).



Candidates are required to take French Placement before entry into the program. Depending on the results of the French Placement procedure, candidates may be required to complete one or more prerequisite French courses before taking any required certificate courses.

Refer to p. 255 for program details.

## High School Applicants

### Ontario

The basic admission requirement is the completion of the OSSD, including six OACs, or the equivalent. The overall average and mix of OACs required is dependent upon the degree or program for which the student is applying. Students who have attained this basic requirement will be considered for admission to First year.

Detailed admission requirements for each undergraduate degree program can be found in chart form starting on p. 41.

Carleton University utilizes, for admission purposes, the credit system as defined by the Ministry of Education and Training of Ontario. In calculating averages, the weighting factor assigned to a subject will be directly proportional to the credit value of that subject.

### Quebec

Students from the Province of Quebec may apply for admission to Carleton University either upon completion of the Secondary V Certificate or after completing work towards the Collegial Diploma. (See Quebec CEGEPs, p. 35.)

Students applying on the basis of high school studies will be considered for admission to the Qualifying-University year as follows:

#### *General Statement*

The Quebec Secondary V Certificate, with a 75 percent average or better and including six college preparatory subjects at the Secondary V level.

#### *Individual Degree Program Requirements*

##### *Bachelor of Arts*

Secondary V work to include two of: English; a language other than English; mathematics (functions).

##### *Bachelor of Engineering*

Secondary V work to include: mathematics (functions); chemistry; physics.

##### *Bachelor of Science*

Secondary V work to include: mathematics (functions); two natural sciences (chemistry and physics).

Students who have completed a Grade 12 program will be considered for admission to First year.

### Other Canadian Provinces

Applicants to degree programs at Carleton must normally be admissible to a university in their own province.

From the Canadian provinces and territories whose pre-university studies culminate in 12 years of schooling, graduates are considered for direct admission into First year. At the present time, graduates from high schools in the following provinces and territories are considered for admission. The overall average required is dependent upon the degree or program for which the students are applying.

Alberta  
British Columbia and The Yukon  
Manitoba  
New Brunswick  
Newfoundland  
Northwest Territories  
Nova Scotia

### Prince Edward Island Saskatchewan

It is recognized that the curriculum of some provinces does not include an introductory course in calculus, or that a final-year mathematics course may have only a few weeks of an introduction to calculus, or that only a few schools in a particular province or territory may offer a calculus course to a selected group of students. In instances where no calculus is presented, and there is a requirement for it in the University program to which the student is admitted, adjustments may have to be made to include Mathematics 69.007★ (Introductory Calculus) as an extra half credit beyond the normal degree program requirements.

It should be noted that for some restricted-enrolment programs, preference may be given to applicants who, along with a high academic standing, have completed an introductory course in calculus.

### The United States

1. Applicants who have completed Grade 12 in the United States or in a U.S. overseas school will be considered for admission to First year. The Grade 12 program must include at least four academic units, and a minimum of 16 academic units must have been completed in Grades 9 to 12.

2. An average of B- or better is required for admission. For Honours programs, an average of A is required. In either case, the applicants must be ranked in the first quarter of their class.

3. Applicants are encouraged to submit SAT scores to supplement their application for admission to the University.

4. Applicants failing to meet the foregoing requirements but with otherwise a good academic record may be considered for admission to an appropriate Qualifying-University year program.

### Other High School Systems

Applicants who have completed high school diploma requirements in other than Canadian or American high school systems will be considered for admission at the appropriate level of entry. Individuals from foreign systems of education will be considered for admission to Qualifying-University year only if they are able to present sufficient evidence that their secondary school background is appropriate to this level of entry with respect to academic content and level of achievement.

Generally speaking, such applicants must meet requirements for admission to a university in their own country.

The following certificates may be accepted to meet admission requirements to the Qualifying-University year:

*United Kingdom, West Indies, East and West Africa, Hong Kong:* The General Certificate of Education (or equivalent) with satisfactory standing in five subjects at the Ordinary Level (or equivalent), at one sitting or, the General Certificate of Secondary Education (U.K.) with satisfactory standing in five courses.

**Note:** Students who achieve at a high level may qualify for a possible reduction in degree requirements. (See Accelerated Progress, p. 33.)

The following certificates may be accepted to meet admission requirements to First year:

*United Kingdom, West Indies, East and West Africa, Hong Kong:* The General Certificate of Education (or the equivalent) with satisfactory standing in five subjects at Ordinary Level (or equivalent) and two suitable subjects at Advanced Level, the latter completed at one sitting.

*International:* The International Baccalaureate.

### Special Requirements for Overseas Students

#### *Translation of Documents*

The University must be in receipt of all official documents by July 1. Applicants from non-English speaking countries must arrange



to submit certified English translations of their academic documents.

### *Financial Information*

The University has no scholarships or financial assistance plans available for incoming foreign students at the undergraduate level.

## **Transfers from Post-Secondary Institutions**

### **Residence Requirement**

In order to qualify for a Bachelor's degree, or a certificate from Carleton University, an undergraduate student must complete at Carleton University at least the equivalent of the final year of that degree program, or at least 4.0 credits for any certificate. (See p. 47.)

When a faculty of the University further specifies "core" level, and detailed departmental requirements, such as Design Project or Honours Thesis, these must also be fulfilled.

### **Universities**

1. Carleton University subscribes to the following General Policy on the Transfer of Course Credits, as adopted by the Council of Ontario Universities:

Acceptance of transfer credits among Ontario universities shall be based on the recognition that, while learning experiences may differ in a variety of ways, their substance may be essentially equivalent in terms of their content and rigour. Insofar as possible, acceptance of transfer should allow for the maximum recognition of previous learning experience in university-level courses.

Subject to degree, grade and program requirements, any course offered for credit by one university shall be accepted for credit by another Ontario university when there is an essential equivalency in course content.

Please contact Carleton's Office of Admissions for information about transferring specific courses.

2. Students applying from other recognized universities may be admitted with advanced standing if they are eligible to continue at the institution from which they wish to transfer.

An applicant who is attending or has attended institutions of post-secondary education must present:

(a) *Official Certified Transcripts* of academic records mailed directly to this University by the registrars of the institutions attended;

(b) In addition, applicants who have taken only one year of study past the secondary school level may be required to submit an official transcript of high school marks mailed directly to Carleton University by the high school concerned.

Credit may be received for courses taken at other recognized degree-granting institutions if:

(i) courses are relevant to a student's proposed program; and  
(ii) the appropriate department recommends that such courses be credited to a student's program. Each application will be evaluated on its own merits.

Students who apply for admission to an undergraduate degree program who already possess an undergraduate degree from either Carleton or another university, are required to complete a minimum of one year's academic work at Carleton University as specified by the department in which the degree is to be taken in order to qualify for another undergraduate degree. (See Multiple Undergraduate Programs, p. 32.)

### **Provisional Admission**

Some transfer applicants (those who have attended only one Canadian university or Quebec CEGEP and have demonstrated better than average academic achievement) will automatically be considered for provisional admission. The provisional approval

will be given prior to the completion of the student's current year, and will provide a detailed statement of the credits to be granted upon transfer. Admission will be confirmed upon presentation of a final transcript that indicates the successful completion of all courses with suitable standing.

## **Ontario Colleges of Applied Arts and Technology (CAATs)**

Students from Ontario Colleges of Applied Arts and Technology who present a minimum Second-Class Honours standing will be considered for admission to the University and may receive advanced standing to a maximum of the equivalence of First year. Assessments regarding admission and advanced standing will be based on the following guidelines:

1. Applicants who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters in a three-year CAAT program, will be considered for admission with advanced standing to a maximum of 5.0 credits (equivalent to one year). The advanced standing would be granted according to the appropriateness of the CAAT program, the course concentration and the achievement in relevant courses.

2. Applicants who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters of a two-year program, will be considered for admission. While such applicants will not normally receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).

3. Applicants who have completed two years of a three-year program and who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters, will be considered for admission. While such applicants will not normally receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).

4. Applicants who have completed the first year of a three-year CAAT program with an overall First-Class standing will be considered for admission to First year of an appropriate University program.

5. Graduates of a two-year or a three-year CAAT program or applicants who have completed two years of a three-year CAAT program who do not meet the minimum published requirements but who are presenting Third-Class standing may receive special consideration on an individual basis.

Other students presenting an incomplete program normally will not be considered for admission to Carleton University on the basis of that program. Such persons may enquire about possible alternatives if they are desirous of seeking admission to a Carleton University degree program at some future date.

## **Quebec CEGEPs**

### *Admission Requirements*

1. A CEGEP applicant who has completed successfully 12 "General" or pre-university courses will be considered for admission to First year, without advanced standing. The overall average required is dependent upon the degree or program for which the student is applying.

2. CEGEP applicants who have successfully completed more than 12 "General" or pre-university courses will be considered for admission with advanced standing based on the number of courses in excess of 12 and not to exceed the equivalent in credits of the First year of the program to which they are admitted. The overall average required is dependent upon the degree or program for which the student is applying.

3. CEGEP applicants from a three year program who have successfully completed more than 12 "General" or pre-university courses will be considered for admission to First year. The overall average required is dependent upon the degree or program for which the student is applying. They may receive advanced stand-



ing for courses taken in addition to these 12 provided they correspond to those in the program to which they were admitted. The number of advanced standing credits will not exceed those of First year.

All applicants should note that failures in their CEGEP studies can adversely affect their admissibility.

#### *Subject Requirements*

Although specific subject requirements have been kept to a minimum, the following are considered necessary prerequisites for the degree program indicated:

*Bachelor of Architectural Studies:* mathematics; physics.

*Bachelor of Arts:* English or anglaiss.

*Bachelor of Commerce:* mathematics.

*Bachelor of Computer Science:* mathematics.

*Bachelor of Engineering:* mathematics; physics; chemistry.

*Bachelor of Humanities:* none specified

*Bachelor of Industrial Design:* mathematics; physics

*Bachelor of International Business:* mathematics.

*Bachelor of Journalism:* none specified.

*Bachelor of Music:* none specified.

*Bachelor of Public Administration:* none specified.

*Bachelor of Science:* mathematics; two experimental sciences.

*Bachelor of Social Work:* none specified

## **Mature and Special Students Admissions**

### **Mature Applicants**

Mature Applicants are persons who satisfy all of the following requirements;

1. are 21 years of age, or over, by December 31 of the year in which they wish to enrol, and
2. are Canadian citizens or permanent residents of Canada, and
3. do not meet the normal admission requirements as published in this calendar, and
4. have been away from full-time studies for a minimum of two calendar years, and
5. have not attended a university or college as full-time students.

Applicants who meet the definition of Mature Applicant will be considered for admission to full-time or part-time studies. They can apply for admission to a B.A. program in the Faculty of Arts and Social Sciences or in the Faculty of Public Affairs and Management, or to a degree program in Engineering, Architecture, Computer Science, Humanities, Industrial Design or Social Work..

These applicants are required to submit proof of age, biographical information and a transcript of their most recent studies.

### **Admission to the Faculty of Arts and Social Sciences, or to the Faculty of Public Affairs and Management**

Mature Applicants will normally be admitted to the First year of a B.A. degree program in the Faculties of Arts and Social Sciences or Public Affairs and Management, or the First year of the undergraduate degree program in Social Work if they have:

- (a) secondary school graduation in an academic program (the overall average required is dependent upon the degree or program for which the student is applying); or
- (b) completed, as a *Special student* at Carleton University, one appropriate full credit (or two half credits) with C- or better standing in the first attempt (or in both of the first two half-credit course attempts); or
- (c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

Mature Applicants are not usually considered for admission to Honours programs in Arts and Social Sciences, Public Affairs and

Management and to the programs in Business, Journalism, Music or Public Administration. If, however, at the end of their First year in another degree program, they meet the requirements for one of the above mentioned programs, they can apply to transfer to that program.

### **Admission to the Schools of Architecture, Computer Science, and Industrial Design**

Mature Applicants can be considered for admission to the First year in the Schools of Architecture, Computer Science, or Industrial Design if they have the prerequisite subjects for the program to which they wish to apply *and* if they have:

- (a) secondary school graduation in an academic program with a 60 percent average; or
- (b) completed, as a *Special student* at Carleton University, one appropriate full credit (or two half credits) with C- or better standing in the first attempt (or in both of the first two half credit attempts); or
- (c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisite subjects (OACs or equivalents) for Architectural Studies, Computer Science, and for Industrial Design are found under *Prerequisite Subjects* at the end of this section.

Persons applying for admission to these undergraduate degree programs without the necessary prerequisites, will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

### **Admission to the Faculty of Engineering**

Mature Applicants can be considered for admission to First year of a degree program in the Faculty of Engineering if they have the prerequisite subjects for the program *and* if they have;

- (a) secondary school graduation in an academic program with an average of 70 percent or better;
- (b) completed, as a *Special student* at Carleton University, one appropriate full-credit (or two half-credits) with a C- or better standing in the first attempt (or in both of the first two half-credit attempts); or;
- (c) other academic or work experience which in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisites subjects (OACs or equivalent) for Engineering are found under *Prerequisite Subjects* at the end of this section. A grade of 60 percent or better is required in each prerequisite subject.

Persons applying for admission to this undergraduate degree program without the necessary prerequisites will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

### **Admission to the Faculty of Science**

Mature Applicants can be considered for admission to the First year of a Major program in the Faculty of Science if they have the prerequisite subjects for the program *and* if they have:

- (a) secondary school graduation in an academic program with an average of 70 percent or better;
- (b) completed, as a *Special student* at Carleton University, one appropriate full-credit (or two half-credits) with a C- or better standing in the first attempt (or in both of the first two half-credit attempts); or;
- (c) other academic or work experience which in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisites subjects (OACs or equivalent) for Science are found under *Prerequisite Subjects* at the end of this section.

Persons applying for admission to this undergraduate degree program without the necessary prerequisites will not normally be



considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

Mature Applicants are not usually considered for admission to Honours programs in Science. If, however, at the end of the First year of a Major program, they meet the requirements for one of the Honours programs, they can apply to transfer to that program.

### Special Students Wishing to Apply as Mature Applicants

Special students who meet all of the criteria for Mature Applicants, can be considered for admission as Mature Applicants: if

- (a) they have completed, as a *Special student*, at Carleton University, one appropriate full credit (or two half credits) with a C– or better standing, in the first attempt (or in both of the first two half credit attempts); and
- (b) they are eligible to continue as Special students at Carleton University; and
- (c) they have completed any additional degree program prerequisite subjects which may be required for a particular program.

Mature Applicants, who as Special students at Carleton University, have not obtained a grade of C– or better in one full credit (or two half credits), in the first attempt (or in both of the first two half credit attempts), can attempt to qualify for subsequent admission through additional courses as a Special student at the University.

Individuals seeking admission under the Mature Applicant status who need further information should inquire at the Office of Admissions or the School of Continuing Education.

### Special Students

#### Admission to a Degree Program as a Special Student

Special students may be admitted to a degree program if their academic achievement at Carleton University indicates a reasonable probability of future academic success. Previous post-secondary studies at other institutions will also be taken into consideration at the time the application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions or the School of Continuing Education before attempting to qualify for admission on the basis of studies as a Special student.

Normally, in the Faculty of Arts and Social Sciences or Public Affairs and Management, a Special student can be considered for admission to a B.A. degree program after successfully completing at least 4.0 credits (or the equivalent), out of the first six attempts with a CI of 4.00 or better. Every grade which appears on the official transcript constitutes an attempt. Attempts are weighted according to the credit value of the course. See *Attempts*, section 5.4, p. 80. The CI is calculated by dividing the total number of grade points accumulated over all attempts by the total number of attempts. See *Continuation Index*, section 5.6, p. 80. Provided that there have been no unsuccessful attempts, students who perform at a higher level can gain admission after fewer credits, i.e. after successful completion of:

- 2.0 full credits (or the equivalent) with a CI of 10.00 or better, or
- 2.5 full credits (or the equivalent) with a CI of 8.50 or better, or
- 3.0 full credits (or the equivalent) with a CI of 7.00 or better, or
- 3.5 full credits (or the equivalent) with a CI of 5.50 or better.

Normally, in the Faculty of Science, a Special student can be considered for admission to a Major program after passing at least 4.0 *approved* full credits (or the equivalent) with a C– standing or better in at least 2.0 full credits (or equivalent). Students seeking admission to the Faculty of Science who do not have the necessary prerequisite subjects are usually not considered for admission until the necessary prerequisites have been successfully completed in addition to the 4.0 *approved* credits (or the equivalent). The prerequisite subjects (OACs or equivalents) are found at the end of this section under *Prerequisite Subjects*. An average of 70 percent or better is required in the prerequisite subjects. The grade offered in OAC Calculus must be 60 percent or better, and no

more than one of the remaining two prerequisite subjects may be offered with a grade below 60 percent.

Special students wishing to apply for admission must meet the requirements within the previous 6.0 full credits (or the equivalent) and cannot present more than two supplemental or grade-raising examinations in meeting the requirements for admission.

Special students who meet the age requirement for Mature Applicants can normally be considered for admission on this basis only if they meet all admission requirements for Mature Applicants.

Special students wishing to apply for admission to the Faculty of Engineering, or the Schools of Architecture, Business, Computer Science, Industrial Design, Journalism, or Social Work, are urged to consult with the Office of Admissions and Academic Records or the School of Continuing Education.

### Prerequisite Subjects

In programs such as Architecture, Computer Science, Engineering, Industrial Design and Science, students must have completed mathematics and science courses at least at the OAC level before being considered for admission. These are called “prerequisite subjects”. The specific OACs (or the equivalent) are listed by program.

#### Architectural Studies

Calculus or  
Algebra/Geometry and  
Physics

#### Computer Science

Calculus  
Algebra/Geometry

#### Engineering

Calculus  
Algebra/Geometry  
Chemistry  
Physics

#### Industrial Design

Calculus  
Algebra/Geometry  
Physics

For all of the above programs a grade of 60 percent or better is required in each subject.

#### Science

Calculus and two of:  
Algebra/Geometry  
Biology  
Chemistry  
Physics

An average of 70 percent or better is required in the prerequisite subjects. The grade offered in OAC Calculus must be 60 percent or better, and no more than one of the remaining two prerequisite subjects may be offered with a grade below 60 percent.

### Previous Carleton Students

All former students who have been formally admitted to a degree or certificate program at the undergraduate level, and who are seeking readmission either to that program or to another program, are governed by differing regulations, depending upon the faculty or school that offers the program

Please refer to the relevant program section of this Calendar or, if there is no specific entry dealing with readmission in that section, consult the appropriate Faculty Registrarial Services office to determine whether or not it is necessary to submit a new application for admission. Please note that previous Carleton students applying to limited enrolment programs must apply by the published deadlines.



## Admission Procedures

### How to Apply

Prospective students, when requesting an application directly from the University, should provide a complete outline of their academic background.

1. The following applicants must apply through the Ontario Universities' Application Centre (OUAC):

(a) Current Ontario high school students should obtain a pre-printed application form from their high school and arrange to have it submitted to the Application Centre.

(b) Overseas applicants must obtain a copy of the OUAC 105F application form designed for them. The Application Centre's address is 650 Woodlawn Road West P.O. Box 1328, Guelph, Ontario, Canada. N1H 7P4.

(c) Other applicants should obtain a common application form from the Office of Admissions, Carleton University, and submit this completed form to the Application Centre.

2. All applicants are required to reveal all previous secondary and post-secondary studies (whether they were successfully completed or not) when completing the application for admission.

3. Previous Carleton University students do not apply through the Application Centre unless they also wish to be considered for admission to another Ontario university. If they wish to apply solely to Carleton, they request a Carleton application form from the Office of Admissions and submit the completed form directly to that office. If they wish to apply to another Ontario university as well as to Carleton, they should, in addition, request a common application form (OUAC 105), complete and mail it with the application fee to the Centre. Carleton should not be included as a choice on the OUAC 105 form.

### Application Deadlines

The following are application dates for the 1998-99 admission year:

**February 1:** Applicants to the Bachelor of Architectural Studies and the Bachelor of Social Work degree programs.

**March 1:** Applicants to the Bachelor of Humanities and the Bachelor of Music degree programs.

**April 1:** Applicants whose documents originate outside Canada or the United States.

**May 1:** Applicants to the School of Journalism and Communication.

**June 1:** All applicants whose documents originate in Canada or the United States, except applicants to the School of Architecture, the School of Journalism and Communication, Music or the School of Social Work.

**June 30:** Students registered in a degree program at Carleton University applying for a transfer to another degree program.

**Note:** Applications for admission may be received after these dates, but the University cannot guarantee that all late applications will be processed in time for registration in the academic session requested. Applicants to programs with limited enrolment should note that such programs may be filled by this date.

### Documents

Documents submitted in support of an application for admission become the property of the University. In some cases, original documents (for example, General Certificate of Education) may be returned to the applicant.

The University may nullify an admission and revoke a registration if it finds that an applicant for admission or registration has, in the process, provided false or incomplete information.

Applicants who are unable to submit documents of previous academic studies as a result of natural disaster, armed conflict, or the securing of refugee status are subject to the following policy:

1. Applicants who are unable to submit supporting documents will not be admitted. They will be encouraged to register as Special students and qualify for admission by taking courses at the University.

2. Applicants who can submit official transcripts but cannot submit course descriptions will be admitted to First year if:

(i) their academic record meets the standards required by the program for which they are applying;

(ii) their high school studies include prerequisite subjects for admission to First year.

3. Applications from candidates who can provide course descriptions based on their recollection of the courses which they have taken will be treated according to the same procedures as those which apply to applicants who cannot submit course descriptions (see 2. above).

### Early Admission

Offers of early admission will be based on the previous year final and current year interim marks.

For Ontario high school applicants, the earliest date by which offers of admission can be received by candidates for the 1998 admissions cycle is June 10. The onus is on each student who does not receive an offer of early admission to supply official final marks to the Office of Admissions and Academic Records.

Out-of-province applicants will receive an offer of admission as soon as interim marks are received by the University and the assessment is completed.

Applicants to a restricted enrolment program should note that their acceptance to an offer of admission must be *received by the Office of Admissions and Academic Records within two weeks from the date the offer was made.*

Carleton reserves the right to withdraw offers of admission for failure to complete the school year satisfactorily. In addition, applicants are advised that although they may receive an offer of admission based on interim marks, final marks, when they are received, will become part of the University's admission record.

### Deferred Admission

Applicants who are unable to register for the academic year to which they were admitted, or who wish to postpone their studies for one year, can request a deferred admission. This request must be made in writing and submitted to the Office of Admissions no later than September 15 of the year during which they were admitted. Applicants must state the reason(s) for requesting a deferred admission.

Applicants who have been granted a deferred admission will receive before their registration, an updated Statement of Standing which will reflect any changes in their program requirements that may have occurred in the intervening time because of changes in programs and/or regulations.

A deferred admission is usually not granted for programs where enrolment is very limited. Students who have been admitted to these programs and wish to postpone their studies for one year should contact the Office of Admissions to have their application for admission deferred until the next admission cycle. At that time their application will be studied with those of other applicants to the program.

Applicants who have been granted a deferred admission and who register at another post-secondary institution will have their admission withdrawn and will have to submit a new application for admission.



## Co-operative Education in Engineering and Science

Co-operative Education is based on the principle that during the undergraduate years an academic program combined with alternating work periods is desirable for effective professional preparation. Work periods allow students to acquire experience in the area of career interest, while the academic terms can more properly be devoted to fundamental and theoretical studies. The practical experience is not a substitute for, but rather a complement to academic studies.

The motivation, responsibility and opportunity for insight gained through Co-operative education can be of significant value to students. The Co-operative concept enables those with a career orientation to become full-time students of their subject, both during the academic terms and during the related work terms, within a structure of organized purpose and serious study.

The following programs currently have approved Co-op options and students should refer to the individual departments for specific information:

- Aerospace Engineering
- Applied Physics
- Biology
- Chemistry
- Civil Engineering
- Computer Science
- Computer Systems Engineering
- Earth Sciences
- Electrical Engineering
- Engineering Physics
- Environmental Engineering
- Mathematics and Statistics
- Mechanical Engineering

### Operation of the Co-op Office

Students in the Co-op programs administered by the Co-op Office for Engineering and Science must satisfy the normal requirements for their degree programs as well as the graduation requirements specific to the Co-operative option in order to graduate with the Co-op designation.

Necessary arrangements for integrating work terms, securing potential employers, arranging interviews, and generally managing the employment process are handled by the Co-op Office. In addition, the Office is involved in counselling students, visiting them on the job, assisting them to adjust to work situations and encouraging their professional development. Each participating program has a Co-op Adviser who will support and counsel students in their specific program.

Students are expected to maintain communication with the Co-op office on all matters pertaining to participation in the Co-op program. Consultation with the Co-op Office is essential where regulations and procedures for the Co-op option are an issue.

### The Work/Study Sequence

The work study sequence and number of mandatory work terms varies according to the individual program. Four-month, eight-month, twelve-month or sixteen-month work terms may be available. Please consult the calendar entry for each program for details. Students in the Co-op option normally require an additional year to complete their degree program.

### Co-operative Education Admission Requirements

To be eligible for Co-op, students must be admitted to an honours degree program in Computer Science, Engineering, or Science, must be registered full-time and must be eligible to work in Canada. As admission and continuation requirements vary somewhat as to the year of entry and GPA required, please consult the calendar entry for the individual programs.

Students not admitted to Co-op directly from high school may apply for admission to the Co-op option of their program at the beginning of the term preceding their first work term. Completed applications should be submitted to the Co-op Office by January 8, May 8, and September 8 for the respective work terms. Further information is available from the Co-op Office or from the individual departments.

### Employment

Although every effort is made to find a sufficient number of work term positions for all students enrolled in Co-op, no guarantee of employment can be made. The employment process is competitive and dependent on market conditions. As well, academic performance, skills, motivation, maturity, attitude and potential will determine whether a student is offered a job.

Where students are unable to obtain suitable employment through the normal placement process or have been given permission to seek their own job but fail to do so, they are expected to continue their academic program on a full-time basis. The only exception to this rule occurs in the Summer term.

### Registration in Work Terms

Unless otherwise stated in the descriptions of specific Co-op options, all work terms must be completed before the end of the final academic term. Co-op students must be registered as full-time students in all academic terms of the Co-op option from point of entry through to the final academic term. The only exception occurs when a student may have sufficient credits to be able to register as a part-time student in the final term. During a work term, Co-op students must register in one of the work term courses designated by their program. While on a work term, students are limited to an additional 0.5 credit, unless they have written support from their employer to take 1.0 credit.

Students are normally expected to complete the full complement of work terms in the prescribed academic term/work term sequence. With prior approval from the Co-op Office, however, allowance can be made for personal considerations, educational opportunities, and other extenuating circumstances.

### Seeking Employment and Employer Interviews

Students are expected to seek employment through the interview process arranged by the Co-op Office (or the individual co-op programs). Students may not seek employment directly with a Co-operative employer unless specific arrangements are made with the Office. Students may arrange their own work term assignment with permission of the Co-op Office, but must have the position evaluated by the Office before it may be considered for credit. Students intending to find their own jobs may not take part in the normal application and interview process arranged by the Co-op Office.

### Student Files and Release of Information

A Co-operative Student Record is maintained for each student in the Co-operative options. This record contains information relating to the completion of work terms, assessment of work term reports, Employer Evaluation of Co-operative Student forms, records of Co-ordinator interviews, etc. This confidential file is available for examination by the student upon proof of identity. No information may be removed from the file.

By registering in the Co-op option, students agree that academic transcripts and pertinent information from their Co-op student records will form part of the application package and may be made available to potential employers. Copies of the form "Employer's Evaluation of Co-operative Student" will be released only upon written authorization from the employer, as this form is considered to be an extension of the employer's file.



## Work Term Assessment

Successful completion of a work term is achieved by the submission of a satisfactory work term report and receipt of a satisfactory evaluation from the employer. Students are expected to submit a written work term report at the end of each four-month work term. During an extended work period the work term report requirement may be for shorter interim reports and a full-length final report. Employers may require additional reports from students as part of the job. Normally, for a report to be considered it must have been written during the work term, or immediately following the work term, and be related to or evoked by the work-term activity. In addition, Co-op students will be assessed on their work performance by their work-place supervisor, the assessment being reported to the Co-op office.

Provision is made for students to upgrade Unsatisfactory work reports for re-evaluation by the beginning of the student's next academic term. Students who fail to submit a work report or who fail to upgrade an Unsatisfactory work report will have a work-term failure recorded on their Co-operative Student Record.

The Co-op Office provides a common set of written guidelines for all work term reports. Work term reports are evaluated and graded by the relevant department.

An unsatisfactory work term report or a poor assessment in the work-place will not affect students' academic progress, but may result in their being required to withdraw from the Co-operative option.

## Employer Performance Evaluations

Evaluation of each student's performance is recorded on the "Employer Evaluation of Co-operative Student" form. The student should ensure that the employer has sent a completed evaluation to the University. An Unsatisfactory evaluation is investigated by the Co-operative Office and may result in a work term failure being recorded on the Co-operative Student Record. Employer evaluations are not recorded on a student's transcript.

## Voluntary Withdrawal from the Co-operative Option

Students may withdraw from the Co-op option without penalty. Such students are eligible to continue in their regular program provided they meet the academic standards required for continuation in that program.

## Required Withdrawal from the Co-operative Option

Students may be required to withdraw from the Co-op option for one or more of the following reasons:

- failure to meet the academic standards required for continuation in the Co-op option (see individual departmental sections for details);
- failure to submit a work term report;
- submission of an unsatisfactory work term report or receipt of an unsatisfactory employer evaluation;
- dismissal with cause by an employer;
- refusal to accept a position which the student has ranked;
- failure to report to an employer or leaving an employer without prior approval;
- independent search for a work placement by a student who has previously elected to take part in the normal application and interview process arranged by the Co-op office;
- missing a pre-arranged interview with an employer.

## Standing and Appeals

The Co-op Office administers the regulations and procedures applicable to the Co-operative programs and will report instances of a student's failing a work term or being required to withdraw from their Co-op option to their academic department. Any decision of the Office may be appealed through the normal channels within the University.

## Co-op Regulations

Co-op students are responsible for satisfying all co-op regulations in the respective program's Co-op Handbook.

# Summary of Undergraduate Degree Programs

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## Architecture

### Degree

B.A.S.

### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Architecture, students must complete this level of study in high school or by registering in either Qualifying-University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Science or for Qualifying-University year Engineering as stated elsewhere in this chart.

### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs, including Calculus, or Algebra and Geometry, and Physics; or the successful completion of Qualifying-University year with an appropriate course pattern.

## Arts

### Degrees

B.A. (Honours)

B.A.

### *Admission Requirements, Qualifying-University Year*

The OSSD. A 75 percent average must be presented on a minimum of ten Advanced credits in Grades 11 and 12, including two of: English, a language other than English or Mathematics, at the Grade 12 level.

Ontario applicants with two or three OACs may be granted advanced standing for one or two Qualifying-University year credits if the mark in each OAC considered for advanced standing is 75 percent or better, and providing that these OACs are not used to meet the minimum OSSD requirements.

### *Admission Requirements, First Year*

*For B.A. (Honours):* The OSSD or the equivalent, with an average of 65 percent or better, including six OACs, a core consisting of an OAC in English (or anglais) with a grade of 60 percent or better, and one from among OAC courses in history, geography, economics, law, mathematics, science, performing or creative arts, French (or français) or a language other than English or French with a grade of 60 percent or better; or the successful completion of Qualifying-University year.

*For B.A.:* The OSSD or the equivalent, with an average of 60 percent or better, including six OACs, a core consisting of an OAC English (or anglais) with a grade of 60 percent or better, and one from among OAC courses in history, geography, economics, law, mathematics, science, performing or creative arts, French (or français) or a language other than English or French with a grade of 60 percent or better; or the successful completion of Qualifying-University year.

The cut-off point for admission will be set annually, and the cut-off point will normally be above the minimum requirement. Applicants falling below the cut-off point will be considered on an individual basis to determine whether there are special circumstances that would permit their admission.

For the B.A. program in Biology, an OAC in Chemistry is required, and an OAC in Calculus and OAC in Algebra/Geometry or the equivalent (Mathematics 69.017★ and 69.007★) are recommended.

Students intending to major in Canadian Studies should present an OAC in French.

For a major in Economics, an OAC in Calculus and one in either Algebra and Geometry or in Finite Mathematics are recommended. Students lacking these courses should take Mathematics 69.017★ and 69.007★. These will be counted as credits towards a degree in Economics but may not count for a B.A. or B.A. (Honours) or Combined B.A. or B.A. (Honours) in Mathematics and Statistics.

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Admission requirements are for the 1998-98 year only, and are based on the Ontario High School system. Holding the minimum admission requirements only establishes eligibility for consideration.



## Commerce

### Degree

B.Com. (Honours)

#### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Commerce, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

#### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 70 percent or better, including at least six OACs, one of which must be Calculus, one must be either Algebra and Geometry or Finite Mathematics, and one must be English.

A grade of 60 percent or better is required in Calculus;

or

successful completion of Qualifying-University Year with a GPA of 6.5 or better including Mathematics 69.007★ and 69.017★, with a CI or 6.00 or better and evidence of an equivalent to an OAC English credit.

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## Computer Science

### Degree

B.C.S. (Honours)

#### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Computer Science, students must complete this level of study in high school or by registering in an appropriate course pattern in Qualifying-University year Arts, Science or Engineering.

#### *Admission Requirements, First Year*

The OSSD or the equivalent, including six OACs, two of which must be (i) Calculus OAC and (ii) Algebra and Geometry. An overall average of 70 percent or better is required along with an average of 70 percent or better in both Calculus and Algebra and Geometry; or the successful completion of Qualifying-University year with a GPA of 7.0 or better and including Mathematics 69.007★ and 69.017★ also with a GPA of 7.0 or better.

#### *First Year with Co-operative Option*

The OSSD or equivalent, including six OACs, two of which must be (i) Calculus and (ii) Algebra and Geometry. An overall average of 85 percent or better is required along with an average of 85 percent or better in both Calculus and Algebra and Geometry; or the successful completion of Qualifying-University Year with a GPA of 11.0 or better and including Mathematics 69.007★ and 69.017★ also with a GPA of 11.0 or better. Students who do not meet these requirements on entry to the B.C.S. program may apply for admission to the Co-operative Option when they meet the requirements specified in the B.C.S. program. (see p.203) for the School of Computer Science.

## Engineering

### Degree

B. Eng.

#### *Admission Requirements, Qualifying-University Year*

The OSSD. A 75 percent average must be presented on a minimum of ten Advanced credits at Grades 11 and 12 including an appropriate preparation in Chemistry, Physics and Grade 12 Mathematics.

Ontario applicants with two or three OACs may be granted advanced standing for one or two Qualifying-University year credits if the mark in each OAC considered for advanced standing is 75 percent or better, and providing that these OACs are not used to meet the minimum OSSD requirements.

#### *Admission Requirements, First Year*

The OSSD or the equivalent, including at least six OACs with an overall average of 70 percent or better. The six OACs must include Calculus, Algebra and Geometry, Chemistry and Physics, with an average of 70 percent or better; or the successful completion of Qualifying-University year with an appropriate course pattern. Although it is not an admission requirement, at least one OAC in either English or Français is recommended.

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## Humanities

### Degree

B.Hum. (Honours)

#### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Humanities, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those of Qualifying-University year Arts as stated elsewhere in this chart.

#### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 80 percent or better, including six OACs; or the successful completion of Qualifying-University year with an appropriate course pattern and the required average.

**Note:** Prospective students must submit a portfolio consisting of a) a one-page statement of why they wish to enter the program, b) a 750-word essay based on reflections on the theme or book chosen each year by the College, and c) a sample of a marked written exercise. The portfolio should be submitted to the College of Humanities, Carleton University, by April 1.

## Industrial Design

### *Degree*

B.I.D.

### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Industrial Design, students must complete this level of study in high school or by registering in either Qualifying-University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Science or for Qualifying-University year Engineering as stated elsewhere in this chart.

### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs, which must include Calculus, Algebra and Geometry, and Physics; or the successful completion of Qualifying-University year with an appropriate course pattern.

Although it is not an admission requirement, an OAC in English is strongly recommended.

**Note:** It is strongly recommended that candidates present a portfolio of any kind of work that could demonstrate creativity and aptitude for the study of industrial design. Candidates are normally expected to make arrangements for a personal interview at the school.

## International Business

### *Degree*

B.I.B. (Honours)

### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in International Business, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 75 percent or better, including at least six OACs, one of which must be either Calculus or Algebra/Geometry or Finite Mathematics and the other must be English. A grade of 60 percent or better is required in the mathematics course offered. If Finite Mathematics is offered, the student must also have successfully completed Grade 12 Advanced Mathematics.

Some knowledge of another language will be beneficial.

## Journalism

### *Degree*

B.J. (Honours)

### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Journalism, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is recommended.

## Music

### *Degree*

B.Mus. (Honours)

### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Music, students must complete this level of study either in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs; or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is recommended.



## Public Administration

### Degree

B.P.A. (Honours)

#### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Public Administration, students must complete this level of study either in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

#### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs; or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is recommended.

The cut-off point for admission will be set annually, and the cut-off point will normally be above the minimum requirement. Applicants falling below the cut-off point will be considered on an individual basis to determine whether there are special circumstances that would permit their admission.

## Science

### Degrees

B.Sc. (Honours)

B.Sc.

#### *Admission Requirements, Qualifying-University Year*

The OSSD. A 75 percent average must be presented on a minimum of ten Advanced credits at Grades 11 and 12, including an appropriate preparation in Chemistry, Physics and Grade 12 Mathematics.

Ontario applicants with two or three OACs may be granted advanced standing for one or two Qualifying-University year credits if the mark in each OAC considered for advanced standing is 75 percent or better, and providing that these OACs are not used to meet the minimum OSSD requirements.

#### *College of Natural Sciences*

#### *Admission Requirements, First Year*

##### *Honours Program*

The OSSD or the equivalent, with an average of 75 percent or better, including six OACs, including a core consisting of one OAC in Calculus and at least two OACs chosen from Algebra and Geometry, Biology, Chemistry, and Physics. In addition, an average of 75 percent or better is required in the core OACs.

A grade of 60 percent or better is required in Calculus and not more than one of the two remaining core courses may have a grade below 60 percent.

For Honours in Psychology, an OAC in English is recommended.

##### *Major Program*

The OSSD or the equivalent, with an average of 70 percent or better, including six OACs, including a core consisting of one OAC in Calculus and at least two OACs chosen from Algebra and Geometry, Biology, Chemistry, and Physics. In addition, an average of 70 percent or better is required in the core OACs.

A grade of 60 percent or better is required in Calculus and not more than one of the two remaining core courses may have a grade below 60 percent.

#### *School of Mathematics and Statistics*

#### *Admission Requirements, First Year*

##### *Honours Program*

The OSSD or the equivalent, with an average of 75 percent or better, including six OACs, including a core consisting of one OAC in Calculus and one OAC in Algebra and Geometry (or the equivalent). In addition, an average of 75 percent or better is required in the core OACs.

Students lacking an OAC in Algebra and Geometry (or the equivalent) must successfully complete Mathematics 69.017★ as a free elective, before taking a 100-level Algebra course.

##### *Major Program*

The OSSD or the equivalent, with an average of 70 percent or better, including six OACs, including a core consisting of one OAC in Calculus and one OAC in Algebra and Geometry (or the equivalent). In addition, an average of 70 percent or better is required in the core OACs.

Students lacking an OAC in Algebra and Geometry (or the equivalent) must successfully complete Mathematics 69.017★ as a free elective, before taking a 100-level Algebra course.

## Social Work

### *Degree*

B.S.W. (Honours)

### *Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Social Work, students must complete this level of study in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Applicants should also refer to the notes appearing in the Admission requirements for First year.

### *Admission Requirements, First Year*

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs; or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is strongly recommended.

Preference will be given to applicants with human service work experience which may be met by employment and/or volunteer experience. Each applicant will be requested to complete a personal data information document which will assist in the evaluation of their suitability for the program.



# Registration

## Requirements

In order for students to register for an academic session the following requirements must be met:

- a) new students must be formally admitted to a degree or certificate program OR have completed the required application for Special student studies;
- b) returning students must be academically eligible to continue in their program;
- c) there must be no outstanding account with the university;
- d) International students must be enrolled in or have received permission for exemption from the University Health Insurance Plan (UHIP).

Detailed instructions regarding registration and course offerings for the Fall/Winter Session will automatically be mailed to newly admitted and returning students. Information regarding Summer Session is normally available in Faculty Registrarial Services offices by March 1.

## Regulations

Students are normally governed by the regulations contained in the Calendar that is in effect at their first registration in their current degree program, unless it is expressly stated otherwise. Students may choose, however, to complete their studies under new regulations that are introduced, if they meet the requirements of these new regulations.

## Course Selection

All course selection and course change activity (adds, drops, withdrawals, change of section) is normally carried out using the university's Touchtone Telephone Voice Response Registration System. Course selection must be completed according to the requirements of the faculty or school and major departments in which the student is registering. Students planning to undertake professional training beyond their undergraduate studies should ensure that their programs meet the requirements for admission to, or registration with, their intended post-graduate program.

## Auditing Courses

Students may register to audit courses (i.e. attend without receiving credit) in addition to those course being taken for credit. Although audited courses receive no academic credit they are counted as part of the total course load for both academic and fee assessment purposes. Access to courses for purposes of auditing is determined by demand for credit space in such courses. Some courses are not available for audit purposes. The deadline to change a course enrolment from credit to audit or audit to credit is the last day for course changes.

## Cross-Listed Courses

Some courses in the Calendar appear under the course offerings of more than one department. These are referred to as cross-listed courses. Students planning to enrol in such a course are advised to consult with their academic advisor, in advance of registration, to ensure that the course number under which they will be enrolling is appropriate to their program. Changes in the department designation of a cross-listed course in which a student has

registered cannot be made after the last day for course changes in the term or session.

## Payment of Fees

Registration is not complete until fee payment arrangements have been finalized with the University Business Office.

## Deregistration

The University may cancel a registration in the following circumstances: if it is determined that an applicant for admission has, in the process, provided false or incomplete information; if fee payment arrangements for a session are not completed according to registration requirements.

## Challenge for Credit

Challenge for Credit is a Carleton University policy that enables students to gain undergraduate academic credit for their own learning and experience outside the University.

Challenge for Credit is available only to students formally admitted to and registered in a program leading to a Degree or Certificate.

This policy gives the student the opportunity to be examined on, and receive credit for, a recognized Carleton course without meeting the normal requirements of registration, attendance, and instruction. Students wishing to Challenge for Credit should enquire at their Registrarial Services office, with documentation to support the challenge. If the academic department, after an interview, is satisfied that the student has adequate experience and learning related to the course in question, it sets an appropriate examination. If the student is successful in the examination, the course is credited to his or her academic record.

Not all courses offered at the University are open to Challenge for Credit. Students interested in obtaining more information should contact their Faculty Registrarial Services office.

(See also Fees, p. 53).

## Transfer of Credit for Courses Completed at Other Universities

### 1. Prior to Admission

At the time a student is considered for admission, credit may be granted for individual courses successfully completed at other recognized, degree-granting institutions, if:

- (a) the individual courses are relevant to a student's proposed program; and
- (b) the appropriate academic department recommends such action.

Each application is evaluated on its own merits. (See also p. 35.)

### 2. Subsequent to Admission

#### (a) Letter of Permission

Students who have been formally admitted to a degree or certificate program may take courses at other universities on Letters of Permission and have the credits transferred to their Carleton pro-

grams, provided they obtain formal approval prior to commencing each course.

#### **(b) University of Ottawa Exchange Agreement**

Undergraduate students may register to take courses at the University of Ottawa to be credited to their Carleton program. The following regulations apply:

**(i)** Students must be registered in a degree program and must be in good standing. In the case of First-year studies, a maximum of two half-credit courses may be taken at the University of Ottawa that year.

**(ii)** Only courses to be credited as part of the degree requirements at Carleton may be taken under the terms of the exchange.

**(iii)** At any time the cumulative total of courses taken at Carleton and counting towards the degree must be greater than the total number of courses taken and/or proposed to be taken at the University of Ottawa.

**(iv)** Courses taken under the Exchange Agreement shall not count towards Residence Requirements at Carleton.

Applications and information about deadlines and registration procedures are available in all Registrarial Services offices. Students should note that space in courses may be limited and therefore applications should be filed well in advance of registration.

#### **(c) International Exchange Agreements**

Undergraduate students may be eligible to take advantage of other exchange agreements with universities throughout the world. For details on these exchanges students should consult with their Registrarial Services office and the Office of Carleton International (1506 Dunton Tower) at least a year in advance of the proposed exchange.

### **Course Changes**

Changes of course (including changes of status from credit to audit or audit to credit) or changes of section within a course must be made by the date contained in the Academic Year. (See p. 12.)

### **Degree Program Changes**

Students wishing to change faculty or school (Internal Degree transfers) must make application through the Office of Admissions and Academic Records. The deadlines for such changes for the Fall/Winter Session are:

Fall Term: June 30

Winter Term: December 1

### **Changes in B.A. (Honours), B.A.: Program Options**

Students wishing to change majors or program options or to change between B.A. (Honours) and B.A., must apply for such changes through their Registrarial Services office. Such applications must be made according to deadlines specified by the Registrarial Services office.

### **Withdrawal**

The responsibility for taking all steps necessary for withdrawal from an individual course, from several courses, or from all courses resides with the student. Ceasing to attend classes, or informing an instructor of intent to withdraw does not constitute withdrawal. Withdrawal is normally done by using the Touchtone Voice Response Registration system. The official date of withdrawal is the date on which the student completes the necessary withdrawal action on the touchtone system.

Students must withdraw from courses on or before the appropriate last date for withdrawal as indicated in the Academic Year. (See p. 12.) It is not possible to withdraw from a course or courses or from the University after the appropriate designated last date for withdrawal.

Withdrawal activity may affect a student's academic standing as prescribed by regulations governing their program. Students are advised to consult their Registrarial Services office for information and guidance. A student who withdraws from a course retains no academic credit for any part of that course.

Fee adjustments for students who are withdrawing from a course, courses, or entirely from the University will be calculated as of the date of the official notification of withdrawal. For clarification of the financial effect of withdrawal on fees see p. 57.

### **Residence Requirement**

In order to qualify for a Degree from Carleton University, a student must complete a minimum number of credits at Carleton University. For the specific number and type of credits required, refer to the appropriate faculty section of this Calendar.

To obtain an undergraduate Certificate from Carleton University, students must present a minimum of 4.0 credits taken at Carleton, including all core courses.

### **Student Records Information**

#### **Names**

As the University is committed to the integrity of its student records, students are required to provide either on application for admission or on personal data forms required for registration, their complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation. Upon making application for graduation, students may be asked to provide proof of their name.

#### **Addresses**

Incorrect address information will delay the receipt of awards, examination results and notification of changes in academic status. Students must notify their Registrarial Services office immediately of any change in:

- (a) permanent or home address (used for registration information);
- (b) local address (used for all mail during the academic session);
- (c) telephone number for permanent address and for local address.



# Academic Standing and Conduct

## General

The Senate may at any time require a student to withdraw from the University if his or her conduct, attendance, work or progress is deemed unsatisfactory.

## Evaluation

To obtain credit in a course, students must meet all the course requirements for attendance, term work and examinations. Before the last date for course changes, instructors will inform their classes, in writing, of all the elements that will contribute to the final grade, and the weighting of each. In those courses in which supplemental examinations are an option, instructors shall also inform their classes, in writing, that supplemental examinations are available to all undergraduate students who have been awarded a grade of *F*. Students will also be informed in writing, of the method of computing the final grade revised by such examinations. See the Faculty of Engineering regulations (p. 93) for a description of the conditions permitting the writing of supplemental examinations.

## Standing in Courses

Standing in courses will be determined by departments. Standing in courses will be shown by alphabetical grades. The system of grades used, with corresponding grade points, is as follows:

A+	12	B+	9
A	11	B	8
A-	10	B-	7
C+	6	D+	3
C	5	D	2
C-	4	D-	1

Grade points indicated above are for courses of one credit in value. Where the course credit is greater or less than one credit, the grade points are adjusted proportionately.

The following percentage equivalents apply to all final grades at Carleton.

A+	90-100	B+	77-79
A	85-89	B	73-76
A-	80-84	B-	70-72
C+	67-69	D+	57-59
C	63-66	D	53-56
C-	60-62	D-	50-52

Other notations are as follows:

### *Aeg*

Pass standing granted under special circumstances. Aegrotal standing is granted only by a faculty committee, in response to a student's application. (See Deferred Final Examinations, p. 49.)

### *Aud*

Indicates course is not being taken for academic credit.

### *F*

Failure. No academic credit.

### *FNS*

Failure without access to supplementals because of incomplete term work or unacceptably low standing. No academic credit. (Not used after 1997-98)

### *FWS*

Failure with access to supplementals. (Applicable only to 400-level courses in Engineering.)

### *Abs*

Absent from final examination. No academic credit. *Abs* is usually equated to failure.

### *Wdn*

Withdrawn in good standing. No academic credit.

### *Def*

Indicates deferral of final grade has been approved by a faculty committee. (See Deferred Final Examinations, p. 49.)

### *IP*

In Progress.

### *Ch*

Credit granted under challenge for credit policy.

### *Sat*

Satisfactory.

### *Uns*

Unsatisfactory.

## Academic Standing

The conditions under which undergraduate students may be promoted, or placed on or relieved of probation, are shown in the Calendar entries for the Faculties and schools.

## Program Year

Progress through degree studies is normally measured in terms of program years. The program year represents the accumulation of the number of credits normally taken in a Fall/Winter session of full-time study in the program in question. In addition, in some jurisdictions, program year implies the accumulation of a certain pattern of credits.

## Religious Accommodation

Carleton University accommodates students who, by reason of religious obligation, must miss an examination, test, assignment deadline, laboratory, or other compulsory event.

Accommodation will be worked out directly and on an individual basis between the student and the instructor(s) involved. Students should make a formal request to the instructor(s) in writing for alternative dates and/or means of satisfying requirements. Such requests should be made during the first two weeks of any

given academic term\*, or as soon as possible after a need for accommodation is known to exist, but in no case later than the penultimate week of classes in that term. Instructors will make reasonable accommodation in a way which shall avoid academic disadvantage to the student.

Students unable to reach a satisfactory arrangement with their instructor(s) should contact the Director of Equity Services. Instructors who have questions or wish to verify the nature of the religious event or practice involved should also contact this officer.

\* When a student's presence is required prior to the date on which classes begin (e.g. for field trips or Orientation activities) any student who cannot meet this expectation of attendance for reasons of religious accommodation should notify the appropriate Registrarial Services office in advance.

## Examination Regulations

Students writing tests and examinations should be aware of the rules governing examination conduct, which are printed on the back cover of official examination booklets.

It may be necessary to schedule mid-year and final examinations during the day for classes held in the evening and vice versa.

All tests and examinations, except laboratory examinations, oral and slide tests and other particular tests, are subject to the following rules:

1. Tests or examinations given in class may not exceed the time allotted for the class;
2. Final examinations in the Summer session will be held in official examination periods;
3. In courses numbered below the 200-level, mid-year and final examinations will be held in the official examination periods;
4. In courses numbered below the 400-level, no tests or examinations may be held during the last two weeks of the Fall or Winter term of the Fall/Winter Session, between the end of the Winter term and the beginning of formally scheduled examinations, or in the last two weeks of classes of the Summer session;
5. In courses below the 400-level, take-home examinations may not be assigned before the last day of classes and are due on the last day of the official examination period;
6. In courses at the 400-level, arrangements for unscheduled examinations are at the instructor's discretion but must be announced at least three weeks before the examinations.

## Deferred Final Examinations

Students who are unable to write a final examination because of illness or other circumstances beyond their control, or whose performance on the examination has been impaired by such circumstances, may, on application, be granted permission to write a deferred final examination. Such applications must:

1. be made in writing to the appropriate Registrarial Services office no later than five working days after the original final examination (students in the Faculties of Arts and Social Sciences see p. 82); and
2. be fully supported in cases of illness by a medical certificate dated no later than one working day after the examination or by appropriate documents in other cases.

Aegrotat standing may be considered for applicants for deferred finals but will be granted only if term work has been of high quality. A student granted aegrotat standing may apply to write a deferred final examination.

**Note:** In the following half-credit courses in Mathematics and Statistics and Physics, where the course is offered in two successive terms, the Deferred Final Examination for the first course will be taken as the second course Final Examination, except where such a delay might delay graduation in the Fall:

Mathematics 69.007★, 69.017★, 69.107★, 69.109★, 69.117★,

69.119★, 69.207★, 69.208★, 69.217★, 69.257★, and 69.259★, Physics 75.101★, 75.102★.

The Deferred Exam for 75.101★ is the Final Exam for the next scheduled course. The Final Exam in the Summer course is written at the end of June.

### Review of Grades

Students are entitled to a review of a final grade. Those wishing to receive such a review should enquire at their Registrarial Services office, after which they may wish to make a formal application for this review. Applications must be filed according to the application deadlines for each term (See p. 12.)

**Note:** The review may lower the grade.

Requests for review are dealt with by the departmental chair in consultation with members of the department.

The charge for each review is refundable if the grade is raised.

## Supplemental Examinations

Supplemental examinations are available in all 400-level undergraduate courses with written final examinations in the Faculty of Engineering. For a description of conditions under which supplemental examinations may be written, see Faculty of Engineering regulations (p. 93.)

## Release of Grades

With the commencement of each Final examination period students may hear their grades by calling the Touchtone Voice Response Registration system at 520-7800 and entering their student number and personal access code.

Students may obtain a copy of their official transcript by completing a "Request for Academic Transcript" form which is available from 315 Robertson Hall. Transcripts required for professional and graduate schools should be ordered well in advance of any deadline set by these institutions.

Final grades, including official transcripts, are not released by the University to students with outstanding accounts. (See Delinquent Accounts, p. 58.)

## Graduation Requirements

In order for students to receive their degree, they must fulfil:

1. all the requirements of the department(s), school or institute in which they are taking the degree;
2. all faculty regulations;
3. all University regulations;
4. all financial obligations to the University.

The student is responsible for meeting graduation requirements. Acceptance of a registration does not grant exemption from any regulation.

Students who wish to be considered for graduation must apply at their Registrarial Services office by the following deadlines:

February 1 - Spring Graduation (June)  
September 1 - Fall Graduation (November)  
December 1 - Winter Graduation (February)

## Records Retention Policy

Since 1990 the University has implemented a records retention policy which provides for the destruction of student file folders and their contents after a period of 10 years has elapsed since the last registration. This policy applies to those students who are formally admitted and registered in degree programs. Further information on this policy can be obtained by contacting the Office of Admissions and Academic Records.



## Instructional Offences

The Senate of the University has enacted the following regulations for instructional offences:

Any student commits an instructional offence who:

1. cheats on an examination, test, or graded assignment by obtaining or producing an answer by deceit, fraud or trickery, or by some act contrary to the rules of the examination;
2. submits substantially the same piece of work to two or more courses without the prior written permission of the instructors from all courses involved. Minor modifications and amendments, such as changes of phraseology in an essay or paper, do not constitute a significant and acceptable reworking of an assignment;
3. contravenes the regulations published at an examination or which are displayed on the reverse side of a properly authorized examination booklet;
4. commits an act of plagiarism (which for the purpose of this regulation shall mean to use and pass off as one's own idea or product work of another without expressly giving credit to another);
5. disrupts a class or other period of instruction if he or she:
  - (a) is a registered member of the class or period of instruction;
  - (b) is warned to discontinue any act or behaviour reasonably judged by the instructor of the course or period of instruction to be detrimental to the class, and having ignored such warning is ordered by the instructor to leave and refuses to leave.
6. any student found in violation of these regulations may be:
  - (a) expelled;
  - (b) suspended from all studies at the University;
  - (c) suspended from full-time studies;
 and/or
  - (d) awarded a reprimand;
  - (e) refused permission to continue or to register in a specific degree program but subject to having met all academic requirements shall be permitted to register and continue in some other program;
  - (f) placed on academic probation;
  - (g) awarded an *F* or *Abs* in a course or examination.

Allegations of instructional offence may be investigated by instructors and/or departmental chairs and, in all cases, will be reported to the faculty Dean. The Dean will promptly advise, in writing, the student and the University Ombudsperson of the allegation and of the student's rights. The Dean will review the allegation and, if not resolved at that level, the allegation becomes subject to final disposition by a tribunal appointed by the Senate. Information about procedure governing tribunals is available from the Clerk of Senate, 607 Robertson Hall.

## Offences of Conduct

The University has in place regulations and procedures to deal with allegations of misconduct made against students in the areas of discrimination and sexual harassment.

### Discrimination:

The University has enacted the following regulation:

Any student commits a general offence who commits an act of discrimination on the basis of race, ancestry, place of origin, colour, ethnic origin, national origin, creed, sex, age, marital status, family status, political affiliation or belief, sexual orientation, or any handicap that is defined as such in the Human Rights Code of Ontario.

The University has also approved the following procedures for enforcement of this regulation:

1. an allegation shall be made in writing to the Dean of the Faculty in which the program to which the respondent has been admitted belongs or, in the circumstances where the respondent has not been admitted to a program, to the Dean of the Faculty where the

majority of courses in which the respondent has registered are administered. An allegation against a student in residence when made by another student in residence which involves the complainant's enjoyment of her/his accommodation shall be made to the Vice-President (Academic). The Dean, or the Vice-President (Academic), as the case may be, shall cause to have an investigation conducted and, upon receipt of the report of the investigation, shall either 1) dismiss the allegation on the grounds of insufficient evidence or lack of jurisdiction by the University, or 2) accept that the allegation is founded and seek the agreement of the respondent to a remedy, or 3) refer the matter to the President. A Dean's dismissal of the allegation may be appealed, within ten working days, to the Vice-President (Academic) who may, in turn, either 1) again dismiss the allegation, or 2) accept that the allegation is founded and propose a remedy to the respondent, or 3) refer the matter to the President. In the case of students in residence, where the original allegation has been made to the Vice-President (Academic) and is dismissed, appeal shall be directly to the President who may either 1) again dismiss the allegation, or 2) accept that the allegation is founded and propose a remedy to the respondent, or 3) refer the matter to a tribunal appointed by the Senate.

2. in the instance where the matter has been referred to the President, the latter shall decide whether or not the University shall conduct a hearing before a tribunal appointed by the Senate.

If the allegation is proven, the tribunal shall decide upon one of the following sanctions:

The student may be:

- a) expelled;
- b) suspended for a period of time from all studies at the University;
- c) restricted in his/her use of University facilities; and/or
- d) given a reprimand.

Should the President decide not to conduct a hearing before a tribunal, the allegation shall be deemed to have been dismissed, but the President shall give written reasons for such a decision, and these reasons shall be communicated to the parties involved.

3. in the instance where the complainant wants redress from the University without the involvement of the respondent, or where the respondent is unknown or is not a member of the University community, and/or where there is a claim that the University has failed or has been negligent in providing a safe, non-hostile environment, the allegation of an offence shall be made in writing to the President, who shall cause an investigation to be conducted. Upon receipt of the report of the investigation, the President may order any relief he/she deems fit, and shall give written reasons for the decision; which reasons shall be communicated to the complainant.

Information about procedure governing tribunals is available from the Clerk of Senate, 607 Robertson Hall.

### Sexual Harassment:

The University has approved a Sexual Harassment Policy which defines sexual harassment as follows:

1. sexual harassment may occur irrespective of gender and is:

- a) unwanted attention of a sexually oriented nature, made by a person who knows or ought reasonably to know that such attention is unwanted; and/or
- b) an implied or expressed promise of reward for complying with or submitting to a sexually oriented request or advance; and/or
- c) an implied or expressed threat of reprisal for not complying with or submitting to a sexually oriented request or advance.

Sexual harassment may include, but may not be limited to, behaviour such as:

- unwarranted touching;
- suggestive remarks or other verbal abuse in a sexual context;

- leering;
- compromising invitations;
- demands for sexual favours;
- sexual assault.

2. sexual harassment may also be: engaging in a course of sexual comment or conduct that is known or ought reasonably to be known to be unwelcome. This form of sexual harassment may affect individuals or groups. It may take the form of excluding an individual or a group from rights and/or privileges to which they are otherwise entitled.

3. sexual harassment may be psychological, verbal or physical and may be all of these. It is behaviour prohibited by the University for all persons and circumstances over which the University has jurisdiction. In some of its forms it may contravene the Human Rights Code of Ontario. Sexual assault is a crime pursuant to the Criminal Code.

4. regulations governing the conduct of students and employees of the University are applied to those times and places at which the actions of such employees and students relate to or impinge upon their function as such.

The University's Sexual Harassment Policy provides for advisory and mediation services to assist in resolving perceived situations of sexual harassment before they reach the level of formal allegation. Attention is drawn, in this regard, to the role of the University's Adviser on Sexual Harassment complaints. The adviser may be contacted at 520-5622, Equity Services.

The University has enacted regulations under which allegations of General Offence (Sexual harassment) may be made against students. These regulations state that a student commits a general offence who engages in conduct which constitutes sexual harassment as defined in the University's Sexual Harassment Policy.

The University has also approved procedures for the handling of allegations of general offence (sexual harassment) against a student. These procedures, as well as the sanctions which a tribunal can impose, are the same as those outlined above for acts of discrimination, save and except that the investigators charged with the investigation which the Dean, the Vice-President (Academic), or the President, as the case may be, shall cause to have conducted, must be selected from the Panel of Investigators provided for under the terms of the University's Sexual Harassment Policy.



## Mention: français

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The Senate of the University has approved the notation "Mention: français," which a student may earn within a B.A. (Honours) or B.A. degree under certain prescribed conditions.

The student must demonstrate the capability of working in French within the discipline of his or her degree, and must also demonstrate knowledge of the history and culture of French Canada. The specific credit requirements (three for a B.A. degree and four for a B.A. (Honours) degree) are developed by individual departments within the University according to the Senate's guidelines, and

approved by the Senate. Students wishing to register for the notation must first demonstrate capability of working in French at the First-year level. Students should refer to their departments for specific information about what arrangements may be available.

The following Schools, Institutes and Departments offer the "Mention: français": Canadian Studies, History, Linguistics and Applied Language Studies, Philosophy, Political Science, Psychology, Public Administration and Sociology and Anthropology.

## Academic Dress

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The academic dress of Carleton University is a compromise between the style of hoods outlined in the American Intercollegiate Code and the dress of the ancient foundations of Britain and America. All three hoods, Bachelor's, Master's, and Doctor's, are of the simple or Oxford shape. The Bachelor's hood is made of black stuff, the Master's and the Doctor's of black silk, and all are lined with silver silk with two chevrons, one of red and one of black. From Bachelor's to Doctor's the hoods are progressively longer and opened to show more and more of the lining.

The velvet border of the hoods, 5 cm. in width for Bachelor's, 7.5 cm. for Master's and 8 cm. for Doctor's, denotes the degree granted, according to the following colour combinations: *Architecture*, cerise; *Arts*, white; *Commerce*, camel brown; *Computer Science*, royal blue; *Engineering*, orange; *Industrial Design*, dark cardinal; *International Business*, camel brown with a red cord sewn slightly in from the lower border; *Journalism*, white with a black cord sewn slightly in from the lower border; *Management Studies*, camel brown with a black cord sewn slightly in from the lower border; *Music*, Venetian pink; *Public Administration*, pea-

cock blue; *Science*, golden yellow; *Social Work*, cream; *Doctor of Philosophy*, purple.

The Bachelor's gown, to be worn with the above hoods, is of full length, made of black stuff, with a gathered yoke behind, and long open-fronted sleeves. The Master's gown is of full style, made of black silk or rayon, with full gathered yoke behind, and closed sleeves with an opening at the elbows. The Doctoral gown is the same style as the Master's, made of fine royal blue cloth with facings of a light blue silk.

The gown of the Honorary Doctor of Laws, Literature, Science, Engineering, Architecture or Fine Arts is a blue robe with bell-shaped sleeves, made of fine royal blue cloth with facings and sleeves in light blue silk. The hood is made of the same material as the gown, has the same lining as that for the degrees granted by examination, and is bordered with dark mauve for the degree of Doctor of Laws, vibrant blue for the degree of Doctor of Literature, red for the degree of Doctor of Science, orange for the degree of Doctor of Engineering, cerise for the degree of Doctor of Architecture, and dark cardinal for the degree of Doctor of Fine Arts.

# Fees

## General Information

1. This Calendar is published several months in advance of the 1998-99 academic year. The University reserves the right to change fees, charges and refund policies without notice.

2. Tuition fees include laboratory and survey camp fees, where applicable. In addition to tuition, compulsory miscellaneous fees are also assessed.

3. The following are the fee assessments for the 1997-98 Fall/Winter Session. Fees are subject to revision and therefore the 1998-99 Fall/Winter Session Registration Instructions and Class Schedule booklet, available July, 1998, should be consulted for any revisions to the following amounts.

4. Please refer to Notes p. 54 for further explanations of some of the following fee components, indicated by an asterisk (\*).

### Composite Tuition and Compulsory Miscellaneous Fees 1997-98 Fall/Winter Session Full-Fee Assessment\*

Canadian Citizens  
Permanent Residents  
Exempted International  
Students\*

International Students

Degrees in Arts and Social Sciences (excluding Humanities, Music, Journalism), Public Affairs and Management (excluding Commerce, International Business, Social Work, Public Administration), Science (excluding Computer Science), and Special Students - Two Terms

3527.66<sup>a</sup>

\$ 9157.66<sup>a</sup>

Humanities, International Business, Music, Computer Science - Two Terms

3957.66<sup>a</sup>

10,157.66<sup>a</sup>

Commerce - Two Terms

3732.66<sup>b</sup>

10,172.66<sup>b</sup>

Social Work, Public Administration, Journalism, (admitted prior to 1996-97) Two Terms

3717.66<sup>a</sup>

10,157.66<sup>a</sup>

Journalism - Two Terms

3957.66<sup>a</sup>

10,157.66<sup>a</sup>

Computer Science Co-op - One Term

2002.18<sup>c</sup>

5102.18<sup>c</sup>

Computer Science Work Term\*

400.00

400.00

Degrees in Engineering - Two Terms

4032.66<sup>d</sup>

10,232.66<sup>d</sup>

Architecture, Industrial Design - Two Terms

3957.66<sup>a</sup>

10,157.66<sup>a</sup>

Qualifying-University Year - Two Terms

5857.66<sup>a</sup>

10,157.66<sup>a</sup>

The above fees include **Compulsory Miscellaneous Fees** as follows:

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>
Accident/Sickness Insurance*	\$46.70	\$46.70	\$46.70	\$46.70
Students' Association	76.75	91.75	38.38	101.75
Athletics	136.11	136.11	68.05	136.11
Health Services	38.11	38.11	19.05	38.11
Career Services	10.00	10.00	5.00	10.00
University Centre	50.00	50.00	25.00	50.00
CUESEF*	-	-	-	-
Student Services Fund*	-	-	-	-
Total	\$ 357.67	\$372.67	\$202.18	\$432.67



**Per-Credit Assessment\***

	Canadian Citizens Permanent Residents Exempted International Students*	International Students
Degrees in Arts and Social Sciences, Public Affairs and Management (excluding Commerce), Science, and Special Students	\$696.20 <sup>a</sup>	2022.20 <sup>a</sup>
Commerce	699.20 <sup>b</sup>	2025.20 <sup>b</sup>
Degrees in Engineering	709.70 <sup>c</sup>	2035.70 <sup>c</sup>
Architecture, Industrial Design	696.20 <sup>a</sup>	2022.20 <sup>a</sup>
Qualifying-University Year	1162.20 <sup>a</sup>	2022.20 <sup>a</sup>

Note: the above fees include **Compulsory Miscellaneous Fees** as follows:

	<i>a</i>	<i>b</i>	<i>c</i>
Students' Association	\$15.36	\$18.36	\$20.36
Athletics	27.20	27.20	27.20
Health Services	7.64	7.64	7.64
Career Services	2.00	2.00	2.00
University Centre	10.00	10.00	10.00
CUESEF*	—	—	8.50
Student Services Fund*	—	—	—
Total	\$62.20	\$65.20	\$75.70

**Notes:**

1. Fees are assessed by term, based on the number of credits per term. For fee assessment purposes, a Fall-Winter 1.0 credit course is assessed as 0.5 credit per term.
2. Students at the full-fee assessment rate are defined as those taking 2.0 credits or more per term. A fixed fee amount is assessed and no additional fees are assessed for credits in excess of the 2.0 credit load per term.
3. Students at the per-credit assessment rate are defined as those taking fewer than 2.0 credits per term.
4. Half-credit course fees will be assessed at one-half the full-credit course amounts.
5. Re-registration in an Honours paper or thesis will be assessed fees equivalent to half the prevailing course fee.
6. The student accident/sickness insurance coverage is based on a one-year period from September 1 to August 31. The insurance fee of \$46.70 is payable once a year at registration in September. Students wishing to opt out of the plan or change coverage must contact the Students' Association (401 University Centre) before October 1 (February 1 for new January registrants).
7. The Computer Science Work Term charge is a charge for program costs associated with cooperative education. These costs include such things as the administration of job placement services, the supervision of the student's work while employed, and the evaluation of the student's work-term reports and employer's assessment reports. The charge is not a tuition fee and therefore is not eligible for income tax deduction. This charge does not include any of the compulsory miscellaneous fees.
8. CUESEF is a student donation to support the Carleton Undergraduate Engineering Student's Equipment Fund. The donation for full-time students is \$50.00. The donation for part-time students is \$8.50 per full-credit course. A donation receipt will be produced and distributed each February. Cancellation and refund applications for those who do not wish to support the fund will be accepted until the following dates after each registration period: October 15; January 31; June 15; July 15. Contact the Office of the Dean of Engineering.
9. The Student Services Fund, starting Fall 1998, is an annual donation from undergraduate students to enhance student services at Carleton. The donation for full-time students is \$35.00. The donation for part-time students is \$7.00 per full-credit course. A donation receipt will be produced and distributed in February. Refunds for students who do not wish to support this Fund will be available at dates and times to be announced.
10. For information on Exemptions from International Fees, please see p. 55.

## Exemptions for International Students

Subject to approval by the Office of Admissions and Academic Records, the following categories of International undergraduate students are exempt from the international students' fee indicated above and will instead be assessed the regular tuition fee:

1. Persons who are permanent residents within the meaning of the Immigration Act.

**Note:** A person who has met "all the preliminary requirements" for permanent residency status, and who can present a letter from Canada Employment and Immigration confirming this, will be assessed regular tuition fees. Such letters must be dated before November 1 and presented before December 18 for the Fall term and dated before February and presented before March 1 for the Winter term.

2. Dependents of Canadian citizens or Permanent Residents.
3. Persons or dependents of persons who have been recognized as Convention Refugees within the meaning of the Immigration Act or who have applied for Convention Refugee Status prior to January 2, 1989.
4. Persons or dependents of persons admitted to and remaining in Canada who have official accreditation from the Canadian Department of Foreign Affairs and International Trade as a diplomat, consular officer, representative or official accredited to Canada by the Canadian Government or who have been admitted to Canada under the Visiting Forces Act.
5. Persons or dependents of persons admitted to and remaining in Canada under Clause 10, (c) of the Immigration Act for the purpose of engaging in employment (other than graduate teaching and research assistants).
6. Participants in an Ontario government sponsored exchange agreement.

**Note:** A dependent includes his/her spouse; unmarried child; or spouse's unmarried child. The dependent status must be fully documented and must have been established a minimum of three years before the student application for exemption.

Students registered and exempted from international fees during the 1995/96 academic session who no longer qualify for exemption under the categories described above may have their exemption status extended until the end of 1998/99 winter term or until the completion of their current program, whichever is earlier.

Undergraduate students who believe they qualify for exemption under one of the foregoing categories must submit documentation to support their claim to the Records Office, Room 405 Robertson Hall. Until a request for exemption has been submitted and approved, students will be assessed the International Student Fees.

## Tuition Fees: Senior Citizens

All persons 60 years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The charge to these students is a \$2.50 per term registration fee.

## Late Registration Charges

The late registration charge applies when payment arrangements over the phone or in-person are made on the first day of classes or later, when mail-in or telebank payments are received in the Business Office on the first day of classes or later, or when a registration payment is returned to the University as non-negotiable and is not replaced before the first day for late registration (see The Academic Year, p. 12) and is non-refundable. For the last day for late registration in any session or term, see The Academic Year, p. 12.

Full-Fee Assessment \$120.00  
Per Credit Assessment \$ 24.00

## Method of Fee Payments

Fees may be paid in accordance with either of the following plans.

1. Payment in full at the time of registration.
2. Payment in two installments:
  - (a) At registration, the amount payable is the fee assessment for the fall-term portion of the courses selected plus a deferred payment charge (\$40.00 at the full-fee assessment rate and \$16.00 per 1.0 credit at the per-credit assessment rate);
  - (b) at or before January 15, all fees remaining due including payment for winter-term courses registered for in September.

Scholarships, bursaries, and loans administered by the University shall be applied first to fees, provided this is not contrary to the terms of the award.

Personal cheques will be accepted for payment of accounts but the University reserves the right to cancel the use of this method by any student if it is abused. A service charge of \$12.50 will be made for each cheque returned to the University as non-negotiable for any reason. Students are requested to have their own cheque forms available when making payments. Any payment returned to the University as non-negotiable must be replaced before the first day for late registration (see The Academic Year, p. 12) or the late registration charge will apply (see above).

## Miscellaneous Charges

### 1. Admission Processing Charge

A fee of \$35.00 is charged to all applicants for admission to First Year who are not currently enrolled in an Ontario High School or a CEGEP. This charge does not apply to those applicants who are applying for re-admission, transferring to another degree program, or to those applicants with post-secondary studies.

### 2. Application for Re-admission or Transfer to Another Degree Program

An application fee of \$40.00 is charged to all students currently or previously enrolled at Carleton University who apply to be admitted as regular students from special student status, to students wishing to transfer from one degree program to another, to persons wishing to be re-admitted to the University or to those applying for a second undergraduate degree program.

### 3. Certificates for Income Tax Purposes

Tuition Certificates and Certificates of Attendance for income tax purposes will be available from the Business Office by the end of February. Students will be charged \$15.00 in advance for each duplicate/replacement tax certificate requested.

### 4. Certification of Enrolment

Students who require certification of enrolment for external purposes may obtain the required documentation by contacting the Office of Admissions and Academic Records, 405 Robertson Hall. Certifications can only be produced after registration has been completed and tuition fees have been paid. The charge for such certifications is \$8.00. Students who have received forms from external agencies which require certification should submit such forms to Admissions and Academic Records, 405 Robertson Hall for verification. Documents relating to Student loan programs and/or financial assistance should be processed through the Awards Office, 202 Robertson Hall. There is no charge for these latter two services.

### 5. Challenge for Credit

A \$150.00 non-refundable charge applies for each challenge for credit. (See also p. 46.)



## 6. Convocation Charge

A charge of \$30.00 applies to all graduates who attend Convocation. This charge is intended to help defray the costs associated with the event, including the provision of gowns and hoods and the rental of facilities. Payment of this charge must be made, by cash or cheque, at the time graduating students collect their gowns and hoods.

## 7. Deferred Admission Charge

A fee of \$30.00 is charged to all applicants who request a deferral of their admission offer. (See p. 38.)

## 8. Diplomas

Diplomas are issued at the time of graduation or are mailed to students who are unable to attend Convocation ceremonies. Students who require a replacement diploma due to loss or damage of their original diploma may order a Display Diploma by contacting the Office of Admissions and Academic Records, 405 Robertson Hall, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6. The charge for a Display Diploma is \$80.00 (unframed) \$140.00 (framed).

## 9. Examination Charges

(a) Supplemental examinations in Fourth-year Engineering courses: A charge of \$50.00 per paper applies for these examinations when written at Carleton. An additional charge of \$50.00 per examination applies if it is to be written at a location other than Carleton.

(b) Deferred Examinations: a charge of \$50.00 applies only if the examination is to be written at a location other than Carleton.

(c) Examination charges are non-refundable.

## 10. Letters of Permission

A charge of \$25.00 per course, (regardless of credit value) to a maximum of \$100.00 per academic session, will be assessed on each request for a Letter of Permission. This charge is payable in advance at the Business Office.

## 11. OSAP Assignment Charge

A charge of \$35.00 applies to all students using the OSAP assignment fee payment method.

## 12. Replacement of Student Identification Cards

A charge of \$20.00 will be assessed for the replacement of student identification cards or the re-issuance of a validation sticker within the session, payable at the time of replacement or re-issuance. Returning students will be required to pay this amount before obtaining a new card at registration in the event that the student's card is not available for validation. The identification card remains the property of Carleton University and it may be cancelled or withheld at the discretion of the University.

## 13. Review of Grades

(a) A charge of \$50.00 per course applies on review of grades.

(b) The charge for a review of grades will be refunded if the grade is raised.

## 14. Special Student Application Charge

An application fee of \$35.00 is charged to all persons applying to take courses as a Special student. (see p. 61).

## 15. Transcripts

Each student will be eligible for one free transcript at graduation. All other transcript requests will be processed after payment is made in advance at the Business Office, at the rate of \$8.00 per

transcript. Mailing address: Transcript Clerk, 405 Robertson Hall, 1125 Colonel By Drive, Carleton University, Ottawa, Ontario, K1S 5B6. (Enclose \$8.00 per transcript.)

An extra charge per transcript will be added to offset the cost of faxing transcripts at the request of students as follows:

Ontario	\$3.25
Rest of Canada	5.25
Outside Canada	8.50

## 16. Transfer of Credit Evaluation Processing Charge

A fee of \$40.00 is assessed to all applicants who have completed post-secondary studies and who may qualify for advanced standing. CEGEP applicants are excluded from this fee.

## Instructional Television Charges (itv)

All existing university charges may be applied to students enrolled in Instructional Television course sections. Charges for Tapes-to-You Service, available to eligible students who study at a distance, are listed below:

### 1. Tapes-to-You Service

Charges for service include delivery of course videocassettes to an individual student's address, and will be imposed on those who arrange for this service. Charges for the 1996/97 academic year were as follows:

Ontario delivery addresses \$85.00/academic term  
Quebec delivery addresses \$110.00/academic term  
Delivery to provinces and territories outside Ontario and Quebec \$190.00/academic term

Please inquire about delivery arrangements and costs to sites outside Canada.

**Note:** The Tapes-to-You (TTY) service arrangements must be made before the deadlines noted for each academic term in the *itv* Brochure. Service will not commence until Tapes-to-You charges are paid in full.

### 2. Late Registration Charges -Tapes-to-You Service

A Late Arrangement Charge of \$20.00 will be levied for all Tapes-to-You (TTY) arrangements made in Late Registration periods as per deadlines noted for each academic term in the *itv* Brochure. For details, refer to the *itv* Brochure under Tapes-to-You service.

### 3. itv Off-Campus Examination Arrangements

*itv* students who have arranged for Tapes-to-You service and live at a distance (160 km) from the university, may apply for off-campus examination service for each *itv* course in which they are registered. A charge of \$50.00 per course will be levied for this service where exams are written at off-campus locations in Canada. These charges must be paid in advance according to the *itv* Off-campus Examination Arrangements Deadlines outlined in the *itv* Brochure. Where available, students will be expected to write off-campus examinations at Examination Centres within 160 km of their local area.

### 4. Miscellaneous Charges

*itv* reserves the right to levy charges for administrative services such as change of delivery addresses, preparation of materials, and for the replacement of unreturned video or print materials.

## Fee Adjustments for Course Changes and Withdrawals

Students who withdraw from a course, or from the University, are required to do so by using the Touchtone Telephone Registration System, or by notifying their Faculty Registrarial Services office in writing. The effective date of withdrawal is the date recorded by the touchtone registration system or the date of receipt of notice of withdrawal by the Faculty Registrarial Services office. Fee adjustments are calculated solely on the basis of the effective date of withdrawal/change, and according to the following procedures.

Fees are assessed by term, based on the number of credits per term. For fee assessment purposes, a Fall-Winter 1.0 credit course is assessed as 0.5 credit per term.

Fees for all students are assessed and adjusted weekly, as of Fridays at midnight if the total number of credits for a term changes. If the total number of credits remains unchanged at Friday midnight, even if several course changes were made during the week, no fee adjustment occurs.

### Changing Status

If a student's course load has changed from the per-credit assessment rate (fewer than 2.0 credits per term) to the full-fee assessment rate (2.0 credits or more per term) at midnight Friday in any week, tuition fees will be adjusted upwards to the full-fee assessment rate.

If a student's course load within a term has changed from full-fee assessment to per-credit assessment at midnight Friday in any week, the student's account will be credited as if completely withdrawing from the full-fee assessment rate and charged at the per-credit assessment rate for the remaining courses. (See the Fee Adjustment Schedule below.)

The Accident/Sickness Insurance fee will apply whenever a student's status is assessed at the full-fee assessment rate. For complete withdrawals, the insurance fee will be included in the full fee adjustment up to midnight Friday, September 11, 1998. For complete withdrawals after September 11, 1998, changes to the per-credit assessment rate or students wishing to opt out of the plan, the accident/sickness insurance fee is refundable only through application to the CUSA office before October 1 (February 1 for January registrants not registered in the previous term).

Late registration charges are non-refundable.

Deferred payment charges are based on the course load at the time of completion of registration and are non-refundable except in the cases of complete withdrawals up to midnight Friday September 11, 1998.

### Fee Adjustment Schedule

The following schedule (see below) applies to all categories of fees, excluding Computer Science Work term. A registration charge or percentage adjustment to the assessed Composite Tuition and Compulsory Miscellaneous Fees (see p. 53) will be made according to the schedule. Note that course loads are assessed as of midnight Friday each week during the teaching term.

### Overdue Accounts

Fees are due and payable at the time of registration. Students may, however, be permitted to pay in two instalments (refer to method of Fee Payments, p. 55), in which case the last payment due-date is January 15. Should a student fail to complete the payments as arranged at registration, or fail to make satisfactory arrangements for the discharge of fees or other outstanding amounts by the last payment due-date, the University reserves the right to cancel the student's registration. All charges and outstanding fees accrued to the date of cancellation will remain due and payable on the student's account.

Fee Adjustment Schedule (see above)		
Adjustment Amount	Adjustment Period	
	Fall Term	Winter Term
Total adjustment	before midnight Aug. 28	before midnight Dec. 18
Total adjustment less a registration charge of \$100.00 (full-fee assessment) \$25.00 per 0.5 credit (per-credit assessment)	Aug. 29 through to Sept. 11	Dec. 19 through to Jan. 1
Total adjustment less: CUSA Ins., Student Services Levy or CUE-SEF (Engineering only) and		
15%	Sept. 12 - 18	Jan. 2 - 8
30%	Sept. 19 - 25	Jan. 9 - 15
45%	Sept. 26 - Oct. 2	Jan. 16 - 22
60%	Oct. 3 - 9	Jan. 23 - 29
75%	Oct. 10 - 16	Jan. 30 - Feb. 5
90%	Oct. 17 - Nov. 6	Feb. 6 - March 12
No fee adjustment	Nov. 7 onwards	March 13 onwards
If the fee adjustment allows for a credit, it will be applied to the student's account and any amounts owing at that time will be deducted before a refund cheque is prepared. It is best to inquire about fee adjustments and implications before making changes.		



## Delinquent Accounts

Registration shall not be complete until a satisfactory arrangement has been made for the payment of fees, and may be cancelled should the student fail to meet these arrangements.

If students owe the University any money at the end of an academic session their accounts become delinquent. Students with delinquent accounts will not have access to final grades, including official transcripts, and will not be permitted to register again until all monies owing have been paid in full by cash or certified cheque.

The University reserves the right to use any legal means to reclaim monies owing.

## Locker Rentals

Telephone: 520-3623

Rent is charged for the use of locker space during the academic year. Lockers are allocated on a first-come first-served basis and may be shared. Locks will be removed from lockers occupied by unauthorized persons and the contents turned over to the Parking office. A fine will be imposed when contents are released. No refunds or exchanges will be made.

Lockers must be vacated by May 1 for the Fall/Winter session and by August 20 for the Summer session, after which they will be cleared and the contents treated as abandoned and will be disposed of by the University without further notice. Lockers are not a safe space to store valuables. The University assumes no responsibility for lost, stolen or damaged articles.

## Parking

Telephone: 520-3623

Permission to park on the campus is granted, for a charge, to students and others associated with the University, but this permission is conditional upon co-operation in the observance of the regulations. Penalties will be imposed for infractions and, under certain circumstances, cars will be towed away at the owners' risk and expense. Security officers are authorized to issue City of Ottawa traffic tickets on campus. Fines for City of Ottawa tickets are set by the city and may vary from time to time. Any vehicle not displaying a valid Carleton Permit is subject to this type of ticket.

Examination grades will be withheld from students owing sums of money to the University. Unless cause can be shown, the third infraction may lead to withdrawal of parking privileges. The regulations related thereto are available in the Parking office. Students and staff who bring cars to the campus are expected to make themselves familiar with these regulations.

# Library

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MacOdrum Library  
Telephone: 520-5621 (hours recording)  
520-2735 (Reference and Information)  
Fax: 520-2750  
Email: [university\\_librarian@carleton.ca](mailto:university_librarian@carleton.ca)  
WWW address: [www.library.carleton.ca/](http://www.library.carleton.ca/)

## Senior Staff

### Acting University Librarian

Martin Foss

### Associate Librarians

Terry Clark (Systems and Technical Services)  
Linda Rossman (Information Services)

### Department Heads

Gail Catley (Acquisitions)  
Bozena Clarke (Access Services)  
Alison Hall (Cataloguing)  
Anita Hui (Collections)  
Susan Jackson (Maps, Data, and Government Information)  
Callista Kelly (Interlibrary Loans)  
Elizabeth Knight (Reference Services)  
Dorothy Rogers (Gifts)

## Collection

The University Library, located on the south-west side of the main quadrangle, provides access to a wide variety of materials in support of teaching, learning, and research activity at Carleton. The collection includes approximately three million books, periodicals, government documents, maps, newspapers, musical scores, compact discs, microforms, archives and rare books. To locate material in the system, you must consult CUBE, the Library's online catalogue. Access to electronic resources is provided through CD-ROM databases, the Internet, and an online literature search service. Increasingly, more materials are acquired through various commercial document delivery services.

## Borrower Information

Books may be borrowed at the Circulation Desk or by using the self-check machine located on the Main floor of the Library. You must have a validated ID card with a barcode or Patron Number in order to borrow. Users of the self-check machine must also know their Personal Access Code. Items, with the exception of reserve materials, circulate for two weeks to undergraduate students, and for four weeks to fourth year honours students, graduate students, faculty and staff. On payment of an appropriate fee, alumni of Carleton University and the general public may purchase an outside borrower's card which entitles the holder to limited borrowing privileges.

The Library participates in the Ontario Council of University Libraries (OCUL) Resource Sharing Agreement. This permits all students, faculty, and staff with a valid Carleton ID card, to register at participating Ontario libraries in order to borrow material directly. The Library also participates in IUBP (Inter-University Borrowing Program), which allows Carleton students to borrow from Quebec universities. The Center for Research Libraries offers students access to its material through the Interlibrary Loans Department. As part of a reciprocal borrowing agreement with the University of Ottawa, students, faculty, and staff of Carleton University are given limited borrowing privileges at the University of Ottawa Libraries.

## Regulations

The Library is governed by Senate-approved regulations. The collection is protected against theft by an electronic book detection system. If requested, Library borrowers must submit books, briefcases, and bags for inspection at the Stacks Services Desk. Late return fines and billing costs are charged for overdue books. Borrowers with three overdue books will have their privileges automatically suspended until all items are returned. Examination grades and transcripts will be withheld from students who owe money to the University.

## Specialized Collections

### CBC Newsworld

The CBC Newsworld Collection is an archival and research collection of videotaped programs housed in Room 402.

### Maps, Data, and Government Information Centre

#### Maps

The Map collection consists of print, microform, and digital cartographic resources covering Canada and the world. These include topographic and thematic maps, as well as atlases, wall maps, gazetteers, and air photographs.

#### Data Centre

The Data Centre is a depository for machine-readable social sciences data and a resource to facilitate data analyses.

#### Government Documents

The Documents collection has print, microform, and electronic publications issued by governments at every level, including international, intergovernmental organizations. The collection is particularly strong in Canadian federal and provincial documents, and publications of international agencies.



### **Special Collections and Archives**

Some print and manuscript materials, because of the content, format, age or value, must be preserved and kept apart from the general collection. This material, as well as the Carleton University Historical Collection and the Library Archives, is housed in Room 503.

### **Specialized Services**

#### **Interlibrary Loans**

If the Library does not have the materials you need, you may request that they be borrowed from another library. Books are usually loaned free of charge; charges may apply for periodical articles provided through conventional I.L.L. or through commercial document delivery services.

### **Joy Maclaren Adaptive Technology Centre**

The Adaptive Technology Centre, located in Room 232, is equipped with adaptive equipment for use by students with disabilities who are registered with the Paul Menton Centre. Wheelchair accessible CUBE terminals, equipped with large monitor, are available throughout the Library.

#### **Orientation**

General tours, CUBE instruction, specialized course seminars and workshops are offered by staff from Reference Services and the Maps, Data, and Government Information Centre. The Library maintains a computer-equipped training centre in Room 102 for instruction in the use of CUBE and other electronic information sources.

#### **Research Assistance**

Reference Services staff will assist clients in finding library materials, researching essay topics, and identifying the best resources to consult for information needs.

# Continuing Education

302 Robertson Hall  
Telephone: 520-3500

## Officers of the School

### Director

Bernadette Landry

### Special Student Services

Karen Spencer (*Registration Co-ordinator*)

## General Information

The School of Continuing Education, in conjunction with other departments at Carleton, co-ordinates and develops both existing and new activities in adult, part-time and non-traditional education on-campus and at a distance. The School of Continuing Education is dedicated to providing lifelong learning opportunities to all those who have the ability and desire to learn.

All currently registered and prospective Special students (see Student Classification, below), should contact the School for registrarial information and to make academic orientation appointments (520-3500). Evening appointments are available on request.

### Office Hours

#### *Labour Day to April 30*

Monday to Friday, 9:00 a.m. - 5:00 p.m.

Monday to Thursday, 6:30 - 8:30 p.m.

#### *May 1 to Labour Day*

Monday to Friday, 8:30 a.m. - 4:30 p.m.

Monday to Thursday, 6:30 p.m. - 8:30 p.m.

## Student Classification

As outlined on p. 17, there are several distinct student classifications at Carleton. Students are classified on the basis of whether they have been formally admitted to a degree program, not on the basis of whether they are studying part-time or full-time.

*Degree students* are those who have been admitted to, and are enrolled in, a degree program, whether graduate or undergraduate, on either a full-time or part-time basis.

*Special students* are those who have not been admitted to a degree program but who are taking degree-credit courses to qualify for admission, to improve professional qualifications, for transfer credit or for personal interest.

*Professional Development students* are those enrolled for non-credit professional development courses.

## Special Students

Any person interested in pursuing learning opportunities is eligible to apply as a part-time Special student in degree-credit courses, subject to course availability and course prerequisites. The application fee is \$35.00.

Special students enrol in the same courses and meet the same course requirements as students in degree programs and may register for day, evening, instructional television or Tapes-to-You courses at a distance.

All registrarial services for Special students are provided through the School of Continuing Education. Current or prospective part-

time degree students are encouraged to consult the appropriate Faculty regulations.

### Proficiency in English

Since the instructional language of the University is English, applicants (including Special students), must be able to understand and be understood in English, both written and oral.

See p. 32 for the statement of policy governing English language requirements for non-native speakers.

### Course Load

Special students may normally enrol in a maximum of 2.0 credits per academic session (Fall/Winter or Summer) and no more than the equivalent of 1.0 credit (e.g. two half-credits) in any one term. Deferred and supplemental (Fourth-year Engineering only), examinations scheduled during the term and audit courses are included in calculating the course load. (See p.18.)

Special students who have completed one or more full credits with an overall CI of 5.00 in all credits taken at Carleton (including failures) may register in the equivalent of 1.5 credits in each term of the Fall/Winter session.

During the Fall/Winter session, Special students may enrol in 5.0 credits under either of the following conditions:

1. The student is enrolled full time in a degree program at another institution and can present a Letter of Permission authorized by an appropriate official of the institution; or
2. The student holds an undergraduate degree from a recognized institution and wishes to pursue further study for professional development or in preparation for entry into graduate study.

### Course Selection

Anyone wishing to be admitted eventually to a degree program is advised to note the specific Faculty requirements for course selection and the admission requirements for Special and Mature entrants as they are listed in this Calendar. Special students who have not completed an OSSD or equivalent may need to upgrade their qualifications by enrolling in courses at the Qualifying-University year level. Individuals seeking admission who need further information should inquire at the Office of Admissions or the School of Continuing Education.

### Special Students Enrolling in Graduate-Level Courses

Anyone wishing to enrol in a graduate-level course as a Special student must obtain a letter of permission from the Chair or Supervisor of Graduate Studies of the appropriate department. Anyone considering a graduate degree is urged to contact the Faculty of Graduate Studies and Research prior to registration as a Special student. Special students enrolled in a graduate-level course are subject to Special student regulations and English language proficiency requirements outlined in the Undergraduate Calendar. (See also p. 32.)



## Auditing

With the permission of the instructor, students may register as auditors in those courses which are not designated as having limited enrolment. Auditors receive no grade and no credit for courses audited. (See p. 46.)

Changes from credit to audit are not permitted in limited enrolment courses.

## Continuation for Special Students

In order to be eligible for further registration, returning Special students must pass 4.0 of their previous 6.0 credits with a C- standing or better in at least 2.0 credits. A grade of Abs is judged equivalent to a failure in determining eligibility for further registration as a Special student. Students who do not meet the continuation requirement will be required to withdraw from the University.

Students who are required by the University to withdraw from a degree or certificate program are ineligible to register as Special students for one calendar year. In addition, such students should not normally expect to gain readmission to a degree program on the basis of work completed as a Special student, nor should they expect to retain credit for these courses.

## Course Change and Course Withdrawal

Special students wishing to make any change in their registration must do so through the Carleton University Touchtone Telephone Registration System.

Course changes must be made by the deadline dates designated in the Academic Year. (See p. 12.) *Changes include additions, withdrawals, section changes, as well as changes of status from credit to audit or vice versa.*

Please note that students who are withdrawing from a course or courses, or from the University entirely, must do so through the Carleton University Touchtone Telephone Registration System.

The date of withdrawal is the date on which the phone call is made to the Touchtone Telephone Registration System. Fee adjustments will also be calculated as of that date.

It is not possible to withdraw from a course(s) or from the University after the last date for withdrawal. (See p. 12.)

For complete details about fee adjustments see p. 57 (Fees).

**Notes:** 1. *The responsibility for taking all steps necessary for withdrawal rests entirely with the student.* Non-attendance of classes, or informing an instructor of intent to withdraw does not constitute withdrawal.

2. A student who withdraws from a course retains no academic credit for any part of that course.

## Deferred Final Examinations

Please see p. 49.

## Appeals

A Special student has the right to appeal any decision regarding the application or interpretation of academic regulations made by the School of Continuing Education.

Appeals must be made in writing and should be submitted to the Secretary, Special Student Policy and Appeals Committee, c/o School of Continuing Education, 302 Robertson Hall, Carleton University.

## Financial Assistance

Special students interested in obtaining financial assistance are advised to contact the Student Awards Office at 520-3600 eight weeks prior to registration. For further information, see p. 24 (Awards Office).

## Special Student and Mature Applicant Admission

### Admission to a Degree Program as a Special Student

Special students may be admitted to a degree program if their academic achievement at Carleton University indicates a reasonable probability of future academic success. Previous post-secondary studies at other institutions will also be taken into consideration at the time the application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions or the School of Continuing Education before attempting to qualify for admission on the basis of studies as a Special student.

Normally, in the Faculty of Arts and Social Sciences, and the Faculty of Public Affairs and Management, Special students can be considered for admission to a three-year degree program after successfully completing at least 4.0 credits out of the first six attempts with a CI of 4.00 or better. The CI is calculated by dividing the total number of grade points accumulated over all attempts by the total number of attempts. (See Academic Standing, section 5.4, p. 80.) Provided that there have been no unsuccessful attempts, students who perform at a higher level can gain admission after the successful completion of fewer credits.

2.0 credits with a CI of 10.00 or better, or  
2.5 credits with a CI of 8.50 or better, or  
3.0 credits with a CI of 7.00 or better, or  
3.5 credits with a CI of 5.50 or better.

Normally, in the Faculty of Science, Special students can be considered for admission to a three-year degree program after passing at least 4.0 approved credits with a C- standing or better in at least 2.0 credits. Students seeking admission to the Faculty of Science who do not have the necessary prerequisite subjects are usually not considered for admission until the necessary prerequisites have been successfully completed in addition to the 4.0 approved credits. The prerequisite subjects (OACs or equivalents) are found under *Prerequisite Subjects* at the end of this section. A grade of 60 percent or better is required in each prerequisite subject.

Special students wishing to apply for admission must meet the requirements within the previous 6.0 credits.

Special students wishing to apply for admission to the Faculty of Engineering or the Schools of Architecture, Business, Computer Science, Industrial Design, Journalism, or Social Work, are urged to consult with the Office of Admissions or the School of Continuing Education.

### Admission to a Degree Program as a Mature Applicant

#### A) Mature Applicants

Mature Applicants are persons who satisfy all of the following requirements:

1. are 21 years of age, or over, by December 31 of the year in which they wish to enrol; and
2. are Canadian citizens or permanent residents of Canada; and
3. do not meet the normal admission requirements as published in this Calendar; and
4. have been away from full-time studies for a minimum of two calendar years; and
5. have not attended a university or college as full-time students.

Applicants who meet the definition of Mature Applicant will be considered for admission to full-time or part-time studies. They can apply for admission to a program in the Faculties of Arts and Social Sciences, or Public Affairs and Management, or to a Major program in the Faculty of Science or to a degree program in Engineering, Architectural Studies, Computer Science, Industrial Design, or Social Work.

These applicants are required to submit proof of age, biographical information and a transcript of their most recent studies.

## B) Special Students

Special students who meet all of the criteria for Mature Applicants can be considered for admission as Mature Applicants if

- (a) they have completed as *Special students*, at Carleton University, 1.0 credit with a C- or better, in the first attempt (or in both of the first two half-credit attempts); and
- (b) they are eligible to continue as Special students at Carleton University; and
- (c) they have completed any additional degree program prerequisites.

Mature Applicants, who as Special students at Carleton University, have not obtained a grade of C- or better in 1.0 credit (or two half-credits), in the first attempt (or in both of the first two half-credit attempts), can attempt to qualify for subsequent admission by taking additional courses as a Special student at the University.

Individuals seeking admission under the Mature Applicant status who need further information should inquire at the Office of Admissions or the School of Continuing Education.

## Admission to the Faculties of Arts and Social Sciences and Public Affairs and Management

Mature Applicants will normally be admitted to the First year of a three-year degree program in the Faculties of Arts and Social Sciences or Public Affairs and Management, or the First year of the undergraduate degree program in Social Work if they have:

- (a) secondary school graduation in an academic program with a 60 percent average or better; or
- (b) completed, as a Special student, at Carleton University, an appropriate 1.0 credit or two half-credits with C- or better in the first attempt (or in both of the first two half-credit attempts); or
- (c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

Mature Applicants are not usually considered for admission to Honours programs in Arts and Social Sciences or Public Affairs and Management and to the programs in Business, Humanities, Journalism, Music or Public Administration. If, however, at the end of their First year in another degree program, they meet the requirements for one of the above-mentioned programs, they can apply to transfer to that program.

## Admission to the Faculty of Engineering, the Faculty of Science, the Schools of Architecture, Computer Science, and Industrial Design

Mature Applicants can be considered for admission to the First year of a three-year program in the Faculty of Science or to the First year of a degree program in the Faculty of Engineering and in the Schools of Architecture, Computer Science, or Industrial Design if they have the prerequisite subjects for the program to which they wish to apply and if they have:

- (a) secondary school graduation in an academic program with a 60 percent average or better; or
- (b) completed, as a Special student, at Carleton University, an appropriate 1.0 credit or two half-credits with C- or better in the first attempt (or in both of the first two half-credit attempts); or
- (c) other academic or work experience which, in the opinion of

the admissions committee, indicates a likelihood of success at university.

The prerequisite subjects (OACs or equivalents) for Engineering, Science, Architectural Studies, Computer Science, and for Industrial Design are found under *Prerequisite Subjects* at the end of this section. A grade of 60 percent or better is required in each prerequisite subject.

Persons applying for admission to these undergraduate degree programs, without the necessary prerequisites, will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

Mature Applicants are not usually considered for admission to Honours programs in Science. If, however, at the end of the First year of a three-year program, they meet the requirements for one of the Honours programs, they can apply to transfer to that program.

## Prerequisite Subjects

In programs such as Architectural Studies, Computer Science, Engineering, Industrial Design and Science, students must have completed mathematics and science courses at least at the OAC level before being considered for admission. These are called "prerequisite subjects". The specific OACs (or the equivalent) are listed by program.

### *Architectural Studies*

Calculus or  
Algebra/Geometry and  
Physics

### *Computer Science*

Calculus  
Algebra/Geometry

### *Engineering*

Calculus  
Algebra/Geometry  
Chemistry  
Physics

### *Industrial Design*

Calculus  
Algebra/Geometry  
Physics

### *Science*

Calculus and two of:  
Algebra/Geometry  
Biology  
Chemistry  
Physics

A grade of 60 percent or better is required in each subject.

## Transfer Credits to Another University

Students who wish to attend Carleton to receive credits toward a degree program taken elsewhere are eligible to register at Carleton as Special students. Students must provide Continuing Education with a Letter of Permission from their home university well in advance of the session for which they plan to register.



# Instructional Television

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302 Robertson Hall  
Telephone: 520-2600 ext. 8560  
Fax: 520-4456  
E-mail: [itv@carleton.ca](mailto:itv@carleton.ca)  
Web address: <http://www.carleton.ca/itv>

**Director,** Robin Allardyce  
**Instructor/Student Services,** Beverlae Buckland

**Presentation and Technical Operations,** Jeff Cohen  
**itv Liaison/Tapes-to-You Service,** Shelly O'Hara

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## General Information

Carleton University provides opportunities for full- and part-time studies to students on the campus and beyond through several types of access to instruction and learning. These include courses offered on campus presented through classroom lectures, seminars, laboratory practice and tutorials. An alternative mode of access is delivery of courses by Instructional Television (itv). Televised courses or course sections are available to students on campus, as well as to those participating from a distance. Instructional Television may be considered as an opportunity to experience learning in a different way and can provide students with more flexibility in course selection and in the development of a personal timetable.

Carleton's alternative delivery media are cable television (itv) and videocassette. Course lectures are broadcast without restriction on cable television in the Ottawa area. For registered students living outside the metropolitan Ottawa cable area, course lectures can be accessed through: selected presentations arranged with cable television companies in smaller communities and by special arrangement with Itv's Tapes-to-You (TTY) Service for home delivery of course lecture tapes. Lectures may also be viewed on the Carleton campus or borrowed overnight from Instructional Media Services' Media Centre. Further information is available in the *itv* Brochure from Instructional Television.

## The Students

For the full-time or part-time degree or Special student, *itv* provides alternative access to courses particularly suited to a program of study, to which normal access may be otherwise denied because of timetable conflicts, space restrictions in on-campus sections or geographic distance from campus. As well, this service allows students to re-enter the education stream, earn credits needed to complete a degree, or test their suitability for university studies. Students registered in *itv* courses are expected to meet all University and Faculty requirements. These requirements may differ among the Faculties. Please refer to the Index for information specific to the various Faculties.

## The Courses

An *itv* course is the full equivalent of the same course offered on campus. *itv* courses are either recorded live on campus or are offered as pre-recorded lectures. Students will complete the same assignments and examinations as the on-campus students, and in the same time period. All rights and responsibilities are the same as those that apply to on-campus courses. *itv* course sections are

allotted the same support resources as those provided for on-campus sections.

Each *itv* course can count as credit towards a degree in the same way as the equivalent on-campus course. Generally speaking, appropriate *itv* courses successfully completed by Special students may be credited towards fulfillment of program requirements when the student is formally admitted to the degree or certificate programs. Students enrolled in a degree program at another institution may take *itv* courses as Special students and transfer earned credits to their home university by means of a Letter of Permission. (See p. 46.)

## Technology Requirements

Students who choose to enrol in a television section and who live within the broadcast area of the cable systems in metropolitan Ottawa must have access to a television set, a cable television converter, and cable television service to view and/or record lectures. It is suggested that they have access to a VCR as well. Those living beyond the reach of these cable systems and viewing course lectures on videocassette, need access to a VCR and a television set to view lecture tapes. Further information is available in the *itv* Brochure from Instructional Television.

## Associated Costs

The tuition for *itv* courses is identical to that for on-campus courses. Any other costs associated with credit courses such as textbooks, course manuals, course materials fees or lab fees are also the same. Additional costs may be incurred, for example, in the form of cable television charges, Tapes-to-You (TTY) Services or off-campus examination charges. Students requiring the TTY Service should call (613) 520-4042 for further information about costs and registration deadlines. (See Fees, p. 56.)

## ITV Tape Loan Service

Copies of the weekly lectures of *itv* courses may be borrowed from the IMS Media Centre (D299 Loeb). There is a charge of \$2.00 per tape (including GST and PST) for a one day loan. The videotapes are received within seven days following the broadcast and are retained until after the regularly scheduled final exam of the course. Viewing stations are available in the Media Centre. For further information on the *itv* tape loan service, please contact the Media Circulation Desk at 520-2600 ext. 7609, or visit our web page at [www.carleton.ca/ims/itv01.html](http://www.carleton.ca/ims/itv01.html).

## Academic Advising

Academic advising is available to Special students through the School of Continuing Education by telephone and in person. Degree students must consult the Registrarial Services office of their Faculty for further information about advising. This service provides orientation to university courses, course selection information and degree admission requirements.

## English Language Requirements

University policy governing English language requirements for non-native speakers applies to all **itv** courses available for credit. (See p. 32.)

Information about **itv** is available in person, by telephone, and in the **itv** Brochure available from Instructional Television.





# The Faculties

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- Arts and Social Sciences
- Academic Regulations: Arts and Social Sciences and Public Affairs and Management
- Engineering
- Public Affairs and Management
- Science





# Arts and Social Sciences

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## Academic Administration

**Dean, B. Jones**

**Associate Dean, (Research and Development), Aviva Freedman**

**Associate Dean (Undergraduate Academic Affairs), R.B. Wells**

**Assistant Dean, D. Saveland**

**Secretary of the Faculty Board, B.S. Elliott**

## Teaching Staff

**Assistant Professor**

**George Pollard, B.A., M.A. (Carleton), Ph.D (Concordia)**

**Lecturer**

**Armand Ruffo, B.A. (York, Ottawa), M.A. (Windsor)**

**Other teaching staff can be found in the individual discipline listings.**

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## Directory of Offices

### **Registrarial Services**

318 Paterson Hall

Student Advising 520-7462

Student Records 520-7460

fass@carleton.ca

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330 Paterson Hall

Dean 520-2355

Associate Deans 520-2354

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**Anthropology**, see Sociology and Anthropology

**Canadian Studies**, P. Armstrong, Director

1206 Dunton Tower, 520-2366

**English Language and Literature**, L.R.T. McDonald, Chair

1812 Dunton Tower, 520-2310

**French**, D. Rosse, Chair

1602 Dunton Tower, 520-2168

**Geography and Environmental Studies**, M. Smith, Chair

B349 Loeb Building, 520-2560

**Environmental Studies**, N. Doubleday

Co-ordinator, 520-2560 or 520-2600, ext. 8370

**History**, E.P. Fitzgerald, Chair

400 Paterson Hall, 520-2828

**Humanities**, P.C. Emberley, Director

300 Paterson Hall, 520-2809

**Religion**, J. Ramisch, Co-ordinator

2121 Dunton Tower, 520-2100

**Institute of Interdisciplinary Studies**, R. Shields, Acting Director

2216 Dunton Tower, 520-2368 or 520-3597

**Child Studies**, T. Daniels, Co-ordinator, 520-2368

**Cognitive Science**, A. Laubstein, Co-ordinator, 520-6612 or 520-2802

**Directed Interdisciplinary Studies**,

Charles Gordon, Co-ordinator, 520-2368

**Languages, Literatures, and Comparative Literary Studies**

P. Roster, Director

1419 Dunton Tower, 520-2109

**Linguistics and Applied Language Studies**, I. Pringle, Director

215 Paterson Hall, 520-6612

**Language Teaching**, T. O'Brien, Assistant Director

215 Paterson Hall, 520-6613

**Degree Programs**, L. Young, Assistant Director

249 Paterson Hall, 520-2802

**Philosophy**, J. Drydyk, Chair

2123 Dunton Tower, 520-2110

**Psychology**, K. Matheson, Chair

B552 Loeb Building, 520-2648

**Sociology and Anthropology**, J. Chevalier, Chair

D795 Loeb Building, 520-2583

**Studies in Art and Culture**, Director, to be announced

423 St. Patrick's Building, 520-3993

**Art History**, R. J. Mesley, Assistant Director

423 St. Patrick's Building, 520-2342

**Film Studies**, C. J. Faulkner, Assistant Director

423 St. Patrick's Building, 520-5606

**Music**, B. Gillingham, Assistant Director

A911 Loeb Building, 520-5770

**Women's Studies**, K. Arnup, Director

A812 Loeb Building, 520-6645



## Degree and Certificate Programs

### Registrarial Services

Assistant Dean of Arts and Social Sciences: D. Saveland

Student Advising: S. McCallum, I. Webster

Student Records: V. LeBlanc

The Registrarial Services provided by the Faculty of Arts and Social Sciences are a source of general information on the academic programs within the Faculty of Arts and Social Sciences and on the regulations that apply within the Faculty. Specific information about course content, subject matter, and the structure of Honours or B.A. programs is obtainable from the academic departments within the Faculty.

The Faculty of Arts and Social Sciences offers programs in four degrees and four certificates.

### Bachelor of Arts (Honours) and Bachelor of Arts (B.A.)

The four-year Honours B.A. provides rigorous and extensive study in one or two disciplines. The Honours degree is necessary for entry to certain fields of employment, and is a desirable preparation for graduate studies and professional training, including teaching.

The three-year B.A. program provides a liberal university education of value either as a general intellectual preparation for a great number of non-specialized careers, or as an introduction to subsequent specialized study.

### Bachelor of Humanities (B.Hum.)

The four-year Honours program is a highly prescribed and intensive course of study in the core disciplines of the liberal arts. In addition to the prescribed core curriculum, students may choose one of four concentrations: Liberal Arts, History, Philosophy and Literature.

### Bachelor of Music (B.Mus.)

The four-year Honours program prepares students for graduate studies in musicology and ethnomusicology, and gives an essential background for careers in music librarianship, music administration, and teaching. The program is offered by the Music discipline of the School for Studies in Art and Culture.

### Certificate in English Language and Composition (C.E.L.C.)

This is a 5.0-credit post-degree certificate intended primarily for practising teachers, to upgrade their knowledge of areas of language and of writing theory that underlie the new Ontario guidelines. It is also open to persons without a degree who hold a teaching certificate. The program is offered by the Department of English Language and Literature.

### Certificate in French Language Studies (C.F.L.S.)

This is a 6.0-credit program designed to permit people who already have some knowledge of French to achieve a high level of proficiency in the language. The program should be of particular interest to mid- and senior-level public servants, business people, teachers and other professionals as well as members of the general public. The program is offered by the Department of French.

### Certificate in French Translation Studies (C.F.T.S.)

This is a 6.0-credit program designed to permit students to acquire and improve skills in translation from English to French. While it is not a professional program, this certificate should meet the needs of those who are occasionally called upon to translate in their work environment. The program is offered by the Department of French.

### Certificate in the Teaching of English as a Second Language (C.T.E.S.L.)

This is a 5.0-credit program in the theory and practice of teaching English as a second language. The program is offered by the School of Linguistics and Applied Language Studies.

### Part-Time Study

Part-time study is a viable method of attaining a degree in the Faculty of Arts and Social Sciences.

Part-time students who wish to limit their studies to evening and summer times should note that the following academic units teach a range of courses in the evening and during the summer that will permit students to complete a major in their discipline.

Art History  
Canadian Studies  
English Language and Literature  
Film Studies  
French  
Geography  
History  
Linguistics and Applied Language Studies  
Music  
Philosophy  
Psychology  
Religion  
Sociology/Anthropology

Students have the choice between full- and part-time registration and may freely alternate between the two.

Students wishing to pursue an Honours degree on a part-time basis are urged to consult with the appropriate academic unit(s) about the scheduling of courses.

### Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *Itv* refer to p. 64.

# Academic Regulations: Arts and Social Sciences and Public Affairs and Management

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## 1.0 Administration of the Regulations

### 1.1 General Administration

The regulations on the following pages apply, except when noted, to all degree and certificate programs of the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management and are administered by the Registrarial Services office of each faculty and the student's school or Major department. Students should refer to the listings for the programs administered by each faculty. Each Registrarial Services office provides an Academic Advising Service, and students are urged to seek advice on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, review of grades, and change of Major or degree program.

### 1.2 Student Responsibility

Students are responsible for knowing and complying with the regulations and for registering in the courses required to fulfil degree requirements. Specific written permission must be obtained for exceptions to the regulations. Permission granted by a department must be confirmed by the appropriate Registrarial Services.

### 1.3 Requests and Petitions

Requests and petitions are made in writing to the student's Registrarial Services office, if possible on the forms provided and with relevant supporting documentation. Students should discuss their requests or petitions with an adviser. The circumstances of any request or petition are held in the strictest confidence.

Decisions on requests are made by the student's Registrarial Services office according to guidelines set by the Joint Committee on Admissions and Studies. Students may have such decisions reviewed by petitioning the Committee.

## 2.0 Admission, Readmission, and Degree Transfer

### 2.1 New Students

Detailed requirements for initial admission to degree and certificate programs are given on p. 33.

### Admission with Advanced Standing

Students may be granted advanced standing on Admission on the basis of study completed at an accredited institution prior to admission. Students with advanced standing may be eligible for Sec-



and or higher Year standing (see 3.4). Academic Standing evaluations for students with advanced standing (see 5.7 and 5.8) will be based in part on the Statement of Standing on Admission.

Students with advanced standing on Admission must meet the applicable Residence Requirement (see 3.11) to obtain a degree or certificate from Carleton University.

## 2.2 The First-Year Curriculum

### Registration in First Year

The First Year of study provides an essential foundation for later work. In order to ensure that they will be in a position to declare a Major (see 4.5), all students are required to include a minimum number of courses leading to a Major (see below) in their first 5.0 attempts (see 5.4).

### Students in B.A. and B.A. (Honours) degree programs

Students in B.A. and B.A. (Honours) degree programs include a First-Year Seminar and courses leading to a Major in their first year program of study. B.A. and B.A. (Honours) degree students should also note the Breadth requirement (see below) and take it into account in planning their program of study.

### First-Year Seminars

B.A. and B.A. (Honours) degree students must complete a 1.0 credit attempt in a First-Year Seminar during their first 4.0 credits of registration. A list of the First-Year Seminars can be found on p. 84. This requirement will be waived for students admitted to a B.A. or B.A. (Honours) degree program in Good Standing who are eligible for Second-Year or higher standing.

Some First-Year Seminars count as courses leading to a Major. Withdrawal from any First-Year Seminar is possible only with permission of the Registrarial Services office.

### Requirement for Breadth

To be eligible to graduate, students in B.A. and B.A. (Honours) degree programs must meet the requirement for Breadth. Students should consider this requirement in planning their registration. There are four breadth areas (see below) and students in the B.A. program must have at least 1.0 credit in each of three areas, while students in B.A. (Honours) must have an additional Breadth credit from any area, for a total of 4.0. Only 1.0 of these credits may be in a student's Major. The following table indicates which courses have been identified as "courses for Breadth," organized by Area and by sponsoring unit.

Breadth Area	Courses
<b>Area 1:</b>  The temporal dimension of human societies, analyzing times before the present era or societies other than our own	Anthropology (54.)225, 318★, 335★ Art History (11.)205★, 206★, 210★, 268★ Classics (01.)116 (13.)100, 102★, 103★, 230, 290, 291 Comparative Literary Studies (17.)207★, 208★ Economics (43.)235 French (20.)271 Geography (45.)103★, 230★, 231★, 330★, 335, 351★, 360★, 361★, 362★ History (01.)112, 113, 145 (24.)101, 102, 130, 170, 205, 222, 223 Law (51.)335★ Music (30.)208★, 209★ Philosophy (01.)130 (32.)160, 206★, 207★, 208★, 209★, 301★, 304★, 306★, 307★ Religion (34.)100★, 101★, 206★, 212★, 227★, 230★, 258★, 271★, 278, 323, 370, 378★, 380
<b>Area 2:</b>  The artifacts of the imagination in literature and/or other forms; or the life of the imagination and culture	Anthropology (54.)334★ Art History (11.)100, 110★, 111★, 115★, 120★, 121★, 202★, 205★, 206★, 210★, 220★, 221★, 230★, 241★, 242★, 250★, 260★, 261★, 268★, 286★, 287★ Classics (13.)200, 209 Comparative Literary Studies (17.)100, 200 English (01.)104, 105, 106 (18.)100, 101, 105, 162, 203, 206, 208, 209, 212★, 215★, 217★, 230, 264, 268, 272, 282, 288, 290★, 292 Film Studies (19.)100, 216★, 221★, 241★, 261★, 268 French (01.)108, 117 (20.)107, 145, 160, 270, 370★, 371★, 372★, 373★, 380★, 381★, 382★, 383★ German (22.)115, 118, 120, 205, 206, 209★, 211★, 213, 240 Greek (15.)105★, 106★, 220★, 221★, 250★ Italian (26.)100, 110, 150, 160, 170, 200, 210 Latin (16.)105★, 106★, 115, 220★, 221★, 250★ Law (51.)192 Linguistics (29.)247 Music (30.)101★, 102★, 116★, 117★, 171★, 172★, 202★, 205★, 206★, 210★, 211★, 212★, 213★, 214★, 215★, 216★, 300, 312★, 313★, 314★, 340★, 341★ Philosophy (32.)223★, 286★, 287★ Religion (34.)203★, 226★, 238★, 257★, 259★, 272★, 303★, 304★, 305★, 328, 330 Russian (36.)100, 120, 201★, 202★, 203, 260 Sociology/Anthropology (56.)383★, 384★ Spanish (38.)115, 120, 203, 204, 205★, 206★, 210★

<p><b>Area 3:</b></p> <p>The understanding of social, technological and/or natural processes and the ways in which that understanding is obtained in science and social science</p>	<p>Anthropology (54.)110, 207★,248★,249★, 275★  Biology (61.)103★, 104★, 192★, 216★  Business (42.)101★, 102★, 211★, 240★, 317★  Canadian Studies (12.)100, 200  Central /East European and Russian-Area Studies (01.)102  Chemistry (65.)100, 103★  Classics (13.)235  Computer Science (95.)100★, 101★, 104★  Economics (01.)103 (43.)100, 201★, 211★, 344★, 361★, 362★, 363★  Environmental Science (62.)101★, 102★, 150★, 201★  French (20.)280  Geography (01.)109, 110, 111 (45.)101, 102★, 105, 205★, 210★, 211★, 220★, 319★, 320★, 329★, 370★  Geology (67.)100, 104★, 105  History (24.)221  Industrial Design (85.)100★, 101★, 352★  Institute for Interdisciplinary Studies (01.)114, 115, 144 (03.)101 (04.)201★, 301★  Interdisciplinary Science (60.)100★, 101★, 352★  Law (01.)118, 121 (51.)300★, 301★, 358★, 380★  Linguistics (01.)123, 124, 125, 126 (29.)100, 185, 232★, 241★, 263★, 264★, 271★, 273★, 274★, 275★, 276★, 280, 311★, 341★, 361★  Mass Communication (01.)127 (27.)111  Music (30.)332★  Philosophy (32.)102★, 151★, 201★, 203★, 231★, 232★, 237★, 245★, 251★, 255★, 308★, 314★, 315★, 332★, 336★, 355★  Physics (75.)101★, 102★, 105, 190, 223★, 224★, 291★, 292★, 298★  Political Science (01.)131, 132, 133, 134, 135 (47.)100, 111★, 112★, 113★, 114★, 115★, 200, 201, 215, 260  Psychology (01.)136, 137 138, 139, 140, (49.)100, 210★, 220★, 250★, 260★, 270★  Religion (34.)125★, 222, 243, 260, 266★  Sociology/Anthropology (01.)141 (56.)100, 211, 220, 235, 241, 243, 311</p>
	<p>Sociology (53.)100, 247, 251★, 255★, 256★, 257★, 271★, 315, 339★, 347★, 351★  Social Work (52.)100, 202★, 203★, 322★, 324★, 325★, 352★  Women's Studies (01.)142, 143 (09.)188, 280★</p>
<p><b>Area 4:</b></p> <p>Matters of human values, ethics and social responsibilities.</p>	<p>Classics (13.)206★  History (24.)210  Law (01.)120, 122 (51.)100, 311★, 312★, 353★  Philosophy (01.)128, 129 (32.)101★, 110, 150, 184★, 211★, 212★, 221★, 236★ 260, 284★, 290, 311★, 312★, 313★, 330, 340, 342★, 348★  Political Science (47.)230  Social Work (52.) 204★, 211★, 212★, 221★</p>

### First-year students in all degree programs: Courses leading to a Major

First-year students in the B.A., B.A. (Honours), B.J., B.P.A. or B.S.W. degree programs must include in their registration at least one course leading to a Major in each of three departments, schools, disciplines or interdisciplinary areas within the Faculty of Arts and Social Sciences or the Faculty of Public Affairs and Management. Students should include in their First-year registration any course that is required for their prospective Major and should be aware that many upper-year courses stipulate prerequisites. Students in the B.J. and B.P.A. programs must also meet the First-year prescriptions of their programs.

Students in the B.Com., B.I.B., B. Hum. and B.Mus. programs must meet the First-year prescriptions of their programs and must include at least one course leading to a Major from each of two different departments, schools, disciplines or interdisciplinary areas within the Faculty of Arts and Social Sciences, the Faculty of Public Affairs and Management or the Faculty of Science.

The courses open to First-year students that fulfill this requirement are:

- *Art and Culture* 01.101
- *Art History* 11.100, 11.110★, 11.111★, 11.115★, 11.120★, 11.121★
- *Biology* 61.103★, 61.104★

- *Canadian Studies* 12.100
- *Central/East European and Russian-Area Studies* 01.102
- *Economics* 01.103, 43.100
- *English* 01.104, 01.105, 01.106, 18.100, 18.105, 18.162
- *Film Studies* 19.100
- *French* 01.108, 01.117, 20.145, 20.160
- *Geography* 01.109, 01.110, 01.111 45.101, 45.102★, 45.103★, 45.105
- *History* 01.112, 01.113, 01.145, all 100- and 200-level courses
- *Law* 51.100
- *Linguistics and Applied Language Studies* 01.126, 29.100
- *Mass Communication* 01.127, 27.111
- *Music* 30.100
- *Philosophy* 01.128, 01.129, 01.130, 32.101★, 32.102★, 32.150, 32.151★, 32.160, 32.184★, 32.201★, 32.203★
- *Political Science* 47.100
- *Psychology* 49.100
- *Religion* 34.100★, 34.101★, 34.125★



– *Sociology/Anthropology* 53.100, 54.100, 56.100

– *Women's Studies* 01.142, 01.143, 09.188

Note: There is no guarantee that every course will be offered each session. Please check the current Registration Instructions and Class Schedule for availability.

## Course Selection

Subject to placement requirements, First-year students can choose 100-level courses from all departments in the Faculty of Arts and Social Sciences, the Faculty of Public Affairs and Management, and the Faculty of Science. Some departments will allow First-year students to take certain courses numbered at the 200-level.

While the University makes every effort to allow students to enrol in courses of their choice, enrolments are limited in many courses, including First-Year Seminars.

## 2.3 Readmission

Students in the following categories are required to apply for readmission before registration. Readmitted students are governed by the regulations in effect at the first registration following readmission.

(a) Students who, after graduation, wish to pursue a further degree;

(b) Students who have been absent from the University for two consecutive Fall/Winter sessions and the intervening Summer session;

(c) Students who have been admitted to a degree program and have taken courses at any other post-secondary institution since their last registration at Carleton (except students studying on a Letter of Permission from the appropriate Registrarial Services office);

(d) Students who have been Debarred. If readmitted, such students will be placed on Probation and will forfeit all previously passed courses with grades of less than C-.

Note: Applications for readmission are obtained from the Admissions Office and must be filed before June 30 for the Fall/Winter session and before April 1 for the Summer session.

## 2.4 Change of Degree Program

Applications to change degree programs must be made to the Office of Admissions by June 30 for the Fall/Winter session, by December 1 for the Winter term of the Fall/Winter session, and by April 1 for the Summer session.

Students who are transferring are governed by the regulations in effect at the first registration following the transfer.

Note: Transfer applications received during the month of July may not be processed in time for the student to take advantage of early registration.

## 3.0 Registration

### 3.1 Registration

Students must complete their registration, including fee payment arrangements, during the official registration periods shown for the session or term in the schedule for the Academic Year on p. 12.

### 3.2 Late Registration

Registration during the late registration period incurs a late registration charge. Registration is not permitted after the late registration period.

Students should note that mere attendance in a course does not constitute registration in that course.

## 3.3 Credit Value

Unless otherwise indicated, courses in the Faculties are of one full credit, indicated 1.0 on all records documents. Courses marked ★ are half-credits, indicated 0.5.

## 3.4 Definition of "Year"

Undergraduate students in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management (other than those admitted to Qualifying-University year) are given "Year" standing according to the number of credits completed with passing grades and counting towards the degree or certificate.

The categories are as follows:

### First Year:

Fewer than 4.0 credits successfully completed and counting towards the degree;

### Second Year:

4.0 through 8.5 credits successfully completed and counting towards the degree;

### Third Year:

9.0 credits through 13.5 credits successfully completed and counting towards the degree;

### Fourth Year:

14.0 or more credits successfully completed and counting towards the degree and in an Honours degree program.

Students admitted to Qualifying-University year will be permitted to register with First-year standing upon successful completion of at least 4.5 credits towards the Qualifying-University year requirements, with the understanding that all outstanding Qualifying-University year requirements must still be met prior to graduation, in addition to the usual degree requirements.

## 3.5 Course Load

In the Fall/Winter session, students may register in up to five half-credits per term or equivalent, audited courses included.

In the Summer session, students may register in a maximum of two half-credits or equivalent per term, including audited courses.

## 3.6 Course Overload

Permission of the student's Registrarial Services office is required to register in a course overload. Such permission will be available only to students whose CI is 7.00 or higher (see 5.6 for the definition of the CI). The maximum load permitted is six half-credits per term in the Fall/Winter Session and three half-credits per term in the Summer session.

## 3.7 Auditing

Students may, with the instructor's permission, register in some courses as auditors. (See p. 46 for details.) Auditors receive no grade and no credit for the course. No change from credit to audit or from audit to credit will be permitted beyond the last day for course changes in any course. Auditors are not permitted in some courses; in particular, students are not permitted to audit courses with limited enrolment.

## 3.8 Change of Course and Section

Changes of course, or of section within a course, must be done through the telephone registration system on or before the deadlines specified on p. 12.

## 3.9 Withdrawal

Students withdrawing from courses or from their entire program must phone the telephone registration system on or before deadlines specified on p. 12. Students receiving scholarships or finan-



cial assistance should consult the Awards Office before dropping courses.

For Summer session 1998 see the Summer Session Supplement.

For Summer session 1999 see the Academic Year p. 12.

Consult p. 57 for the financial implications of withdrawal.

**Note:** The onus for officially withdrawing by the telephone registration system rests solely with the student. Ceasing to attend lectures or informing the instructor does not constitute withdrawal, and will result in an *Abs* or grade of *F*.

### 3.10 Courses from Other Faculties and Schools

Students must consult their Registrarial Services office about registering in courses in Engineering, Industrial Design, and Architecture. Science and interdisciplinary courses are generally acceptable. Professional courses in Engineering, Industrial Design and Architecture are generally not acceptable. Performance courses in Music are open only to students in certain Music programs. Professional courses in Journalism are not acceptable options in the B.A. program. A limited number of Architecture courses are permitted in certain programs. Students who wish to take courses in Engineering, Industrial Design, and Architecture which are not part of their program or which are not listed as being open to students in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management, must obtain prior permission from the Department(s) of their Major, and from the unit offering the course.

### 3.11 Residence Requirement

#### Degree Programs

To obtain a degree from Carleton University, students must present a minimum of 5.0 credits taken at Carleton and counting toward the degree. Departments may require that certain of these credits be at the senior level. These 5.0 credits must include credits as follows:

B.A.: 3.0 credits in the Major;

B.A. Combined Major: 3.0 credits in one Major and 2.0 credits in the other;

B.A. (Honours): 4.0 credits in the Major, including the Honours thesis or essay or comprehensive examination where it is a requirement of the program;

B.A. (Honours) Combined Major: 3.0 credits in one Major and 2.0 credits in the other, the 5.0 credits to include the Honours research project where it is a requirement of the program.

#### Certificate Programs

To obtain an undergraduate Certificate from Carleton University, students must present a minimum of 4.0 credits taken at Carleton, including all core courses required for the certificate.

#### Minor

To obtain an undergraduate Minor designation from Carleton University, students must present a minimum of 2.0 credits in the Minor taken at Carleton.

### Multiple Undergraduate Degrees

Students admitted to a second undergraduate program must, in addition to meeting the requirement described above, present a minimum of 5.0 credits for the new degree program (4.0 in a certificate program) taken at Carleton and not counted for any previous program. These must include 3.0 credits in the Major of the new degree program. Variations from this pattern may, in very exceptional circumstances, be approved by the Joint Committee on Admissions and Studies. Students should consult their Registrarial Services Office.

### 3.12 Transfer of Credit

#### Letters of Permission and Exchanges (not with the University of Ottawa)

Before taking courses at another university, students must obtain a Letter of Permission from their Registrarial Services office.

Students who take courses without obtaining a Letter of Permission will not be granted credit for the courses. Permission obtained from an instructor or from a department does not obligate the University to accept a credit.

#### Eligibility:

To be granted permission, students must:

(a) have completed at Carleton a minimum of 4.0 credits counting towards their degree program; and

(b) be a Declared Major; and

(c) be in Good Standing (see 5.7 and 5.8); and

(d) meet any other specific requirements of an Exchange. (See also 3.11 Residence Requirement.)

**Note:** Letters of Permission are issued only to students in Good Standing. Letters of Permission conditionally granted for Summer session courses will be revoked if students do not attain Good Standing in the Academic Standing evaluation at the end of the Fall/Winter session.

For other sessions of registration, students must be in Good Standing and continuing at that level of performance, as determined by the Registrarial Services office.

#### Maximum Load

Subject to the regulations of the host university, a Carleton student studying on a Letter of Permission may take a maximum of 2.0 credits in the Summer and 5.0 credits in the Fall/Winter session.

#### Transfer Credit Grading

(a) Grades for successfully completed courses taken on Letters of Permission will not be transferred.

(b) Students in the B.A. and B.A. (Honours) programs must obtain a minimum grade of C- (or higher if the Major department or the student's Registrarial Services office so stipulates). The student shall be notified of such a requirement when the Letter of Permission is issued.

(c) Passing grades below the minimum standard will receive the transcript notation of NCD (see 5.1).

(d) Failing grades in courses taken on a Letter of Permission will count as unsuccessful attempts in all assessments of eligibility to register and graduate and will be included in the calculation of the CI (see 5.4 and 5.6).

(e) Students on Letters of Permission or on Exchanges are not eligible to take Supplemental or Grade-Raising examinations if offered at the host institution.

### 3.13 Exchange Agreements

Students in Good Standing (see 5.2) may be eligible to study elsewhere on one or more of the many exchange agreements available to undergraduate students. For details on Transfer of Credit regulations, see 3.12.

#### The University of Ottawa Exchange Agreement

Carleton undergraduate students may register to take courses at the University of Ottawa to be credited to their Carleton degree. The following regulations apply:

1. Students must be registered in a degree program at Carleton and must be in Good Standing (see 5.2).



2. Only courses to be credited as part of degree requirements at Carleton may be taken under the terms of the exchange.

3. At any time, the cumulative total of courses taken by the student at Carleton and counting toward the degree must be greater than the total number of courses taken at the University of Ottawa and counting toward the degree. In the case of first year studies, a maximum of 1.0 credit (6.0 credits U of O) may be taken at the University of Ottawa that year.

4. Courses taken under the Exchange Agreement will not satisfy the residence requirement for students' degree and Major programs (3.11).

5. Grades for courses taken on the Exchange Agreement will be reported on the Carleton transcript and will be included in the calculation of the CI and GPAs.

Students should consult their Registrarial Services office for application forms and information on procedures and deadlines.

Students should note that space in courses may be limited and therefore applications should be filed as early as possible.

Students withdrawing from an exchange agreement course must notify both Universities, or a grade of *Abs* or *F* may be recorded. There may be financial implications.

### 3.14 Student Records

Incorrect address information will delay the receipt of awards, and notification of changes in academic status. Addresses must include postal codes. Students must notify their Registrarial Services office immediately of any change in:

- (a) permanent or home address (used for registration information);
- (b) local address (used for all mail during the academic session);
- (c) telephone number for permanent address and for local address;
- (d) name.

### 3.15 Challenge for Credit

#### Degree Programs

A student with significant work-related experience and non-academic learning equivalent to a specific Carleton course may receive credit for that course through the Challenge for Credit procedure. If the University is satisfied that a student is adequately grounded in a course, credit may be granted by examination, without the normal requirements of attendance and instruction. Not all departments participate in this procedure. There is a charge for each challenge. A student may present no more than 5.0 challenged credits in a degree program. Students must enquire at their Registrarial Services office.

Credits obtained by challenge may be not used to satisfy the Residence Requirement for the student's degree program and Major discipline (see 3.13).

#### Certificate Programs

A student may challenge up to 1.0 credit in an undergraduate Certificate. Students must enquire at their Faculty Registrarial Services office.

## 4.0 The Major

Every student in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management is required to specialize in an area of study called the Major, which is displayed on both the transcript and the diploma awarded at graduation. Some areas of study are given in separate degrees while the rest are offered within the B.A. and B.A. (Honours) degree programs. (see 4.4)

Areas of study can be either in a discipline or in an interdisciplinary program. Students in the B.A. and B.A. (Honours) degree pro-

grams may also pursue a Combined Major, with two disciplinary focuses.

The Major determines some graduation requirements in addition to those of the degree program. Being a Declared Major may be a prerequisite for some required courses and is normally required for Good Standing after First Year. The department or other academic unit which offers or oversees courses in the Major offers academic advice regarding the Major while academic advising on the degree program is provided by the advisors in the Registrarial Services office.

### 4.1 The Minor

A student may pursue a Minor in an area of specialization which complements or supplements the Major. Minors sponsored by units offering B.A. and B.A. (Honours) degrees normally consist of 4.0 credits. Courses may not be counted towards both a Major and a Minor. Students may declare a Minor at any point in their academic career, so long as they meet the stated entrance requirements for the Minor. Since entry may be competitive, application deadlines should be closely followed. The unit(s) offering the Minor is a primary source of academic advice for students about the Minor requirements.

### 4.2 The Concentration

A student may pursue a Concentration within some Majors, representing an area of specialization within the Major. Students may apply to enter a Concentration within their Major at any point in their academic career, so long as they meet the stated entrance requirements for the Concentration. However, since entry may be competitive, application deadlines should be closely followed. The unit(s) offering the Concentration is a primary source of academic advice for students about the Concentration requirements.

### 4.3 The Specialization

A student may pursue a Specialization designation within some Majors, indicating that the student has completed a highly structured, Senate approved program which features both a Major and a special set of designated required courses outside the Major. The unit(s) offering the Specialization is a primary source of academic advice for students regarding Specialization requirements.

### 4.4 Programs and Program Options Offered

The table on p. 77 illustrates the program choices available in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management.

### 4.5 Declaring a Major

Students are said to be 'Declared Majors' after their applications to declare a Major have been approved by the appropriate Registrarial Services office and so long as they retain their status as a Declared Major. Being a Declared Major is a requirement for an Academic Standing evaluation of 'Good Standing' (see 5.2) for all students eligible for Second-Year (or higher) Standing (see 3.4).

Students are said to be 'Undeclared' if they have not applied to Declare a Major, or if their application has not been approved, or if they have been removed from their Major and have not yet declared another in its place.

#### (a) Disciplines offered as separate degrees

Students normally apply to be admitted directly to the First Year of disciplines offered as separate degrees (B.J., B.Com., B.I.B., B.Mus., B.P.A., B.S.W., B.Hum.). Students may apply through the Office of Admissions to transfer into or out of these programs (see 2.4) but as most of these programs are subject to enrolment limitations, entry will be competitive. Consult the appropriate departmental entries for further details.

## Programs and Programs Offered

	Hons.	Comb Hons.	B.A.	Comb. B.A.	Minor
Architecture		✓		✓	
Anthropology*	✓	✓			✓
Art History	✓	✓	✓	✓	
Art and Culture	✓				
Biology	✓	✓	✓	✓	
Business					✓
B. Com.	✓				
B. Com. with Concentration in Accounting	✓				
B. Com. with Concentration in Information Systems	✓				
B. Com. with Concentration in International Business	✓				
B. Com. with Concentration in Technology and Operations Management	✓				
B. Com. with Concentration in Business Operations Analysis	✓				
B. Com. with Concentration in Strategic Human Resources Management	✓				
B. Com. with Concentration in Finance	✓				
B.I.B.	✓				
Canadian Studies*		✓	✓	✓	✓
Central/East European and Russian Area Studies	✓	✓			
Child Studies	✓		✓		
Cognitive Science	✓				
Criminology and Criminal Justice with Concentration in Law	✓		✓		
Criminology and Criminal Justice with Concentration in Psychology	✓		✓		
Criminology and Criminal Justice with Concentration in Sociology.	✓		✓		
Directed Interdisciplinary Studies	✓		✓		
Economics	✓	✓	✓	✓	✓
Economics with Concentration in Financial Economics	✓				
Educational Linguistics					✓
English	✓	✓	✓		✓
Environmental Studies	✓		✓		
Film Studies	✓	✓	✓	✓	
French	✓	✓	✓	✓	✓
Geography	✓	✓	✓	✓	✓
Geography with Concentration in Geographic Information Processing	✓				✓
History*	✓	✓	✓	✓	✓
Humanities (B.Hum)	✓				
Japanese					✓
Journalism (B.J.)	✓	✓			
Law	✓	✓	✓	✓	
Law with Concentration in Business Law	✓	✓			
Law with Concentration in Law, Policy and Government	✓	✓			
Linguistics and Applied Language Studies*	✓	✓	✓	✓	✓
Mass Communication	✓	✓	✓		✓
Mathematics					✓
Music	✓	✓	✓	✓	
B.Mus.	✓				
Philosophy*	✓	✓	✓	✓	✓
Philosophy: Specialization in Philosophy, Ethics and Public Affairs	✓				
Political Science*	✓	✓	✓	✓	
Public Administration (B.P.A.)*	✓				



Psychology\*  
Religion  
Social Work (B.S.W.)  
Sociology\*  
Sociology with Concentration in Population Studies  
Sociology/Anthropology\*  
Women's Studies

\* Mention: français (see 7.6)

### (b) Disciplines offered as Majors in the B.A. and B.A. (Honours) Programs

Students admitted to the B.A. and B.A. (Honours) degree programs are encouraged to declare their Majors by the time of their first registration. All students in B.A. and B.A. (Honours) degree programs must be Declared Majors at the time of the first Academic Standing evaluation following Admission (see 5.3). Students eligible for Second-Year Standing (see 3.4) who are not Declared Majors must obtain special permission from Registrarial Services to register. Such permission is normally available only to students who have met the First Year course distribution requirement (see 2.2).

Students in a B.A. or B.A. (Honours) program who are eligible for Third or higher Year Standing and who cannot declare a Major, will be Debarred (see 5.2).

Students may apply to declare or change their Major at their Registrarial Services Office and should consult the academic advisors about their program requirements and deadlines.

### Interdisciplinary Degree Programs

Students should apply for admission to these degree programs as early as possible and certainly by the end of first year (transfer students can apply at any time before completing their final 5.0 credits, but may have to make up credits). The application form, and, in the case of Directed Interdisciplinary Studies, a proposed program of study must be submitted to the appropriate co-ordinator. For Directed Interdisciplinary Studies special application forms are required; they are available from the Institute of Interdisciplinary Studies office and must be submitted before July 1st for September entrance, November 1 for January entrance. General regulations for B.A. (Honours) and B.A. degree programs, as appropriate, apply to interdisciplinary degree programs.

For details of interdisciplinary degrees offered and requirements of each, see the Institute of Interdisciplinary Studies section of the Calendar, p. 297.

### (c) Disciplines offered as Minors

Students may apply to declare a Minor at any time; however some Minors are subject to competitive entry and admission may therefore be limited (see 4.8).

### 4.6 The Grade Point Average (GPA)

The GPA for entry into and continuation in a Major will be calculated over all successful attempts in courses in the Major. The GPA in a Minor, Concentration or other program option will be calculated over all successfully completed, graded courses counting towards the program option.

Where the academic record includes Supplemental or Grade-raising examinations (no longer offered) and/or repeated courses, only the last attempt will be included in the GPA. For-

Hons.	Comb Hons.	B.A.	Comb. B.A.	Minor
✓	✓	✓	✓	
✓	✓	✓	✓	✓
✓				
✓	✓			✓
✓				
		✓	✓	
	✓		✓	✓

feited courses will be excluded from the GPA calculation as will all courses noted as *ETD* or *NCD*.

The GPA is calculated by dividing the total Grade Points accumulated from the specified set of courses by the number of credits obtained. The GPA is calculated to one decimal place and is not rounded.

Once eligibility to graduate has been established, the class of degree to be awarded is determined by the regulations in sections 7.3 and 7.5.

The GPA for a second or subsequent degree will not include courses used to meet the program or option requirements of a previously awarded degree.

### 4.7 Standards for Declaration and Continuation in the Major

Acceptance is subject to any specific requirements of the intended Major as published in the relevant Calendar entry.

### Major programs not subject to enrolment limits

To be accepted into a Major not subject to enrolment limitations, students who are eligible for First-Year Standing (see 3.4) declare the Major at their Registrarial Services office. Students who are eligible for Second-year or higher standing (see 3.4) must have completed at least one course leading to the desired program or must be enrolled in such a course to declare the Major.

If a GPA in the Major can be calculated, that GPA must meet or exceed the minimal Graduation standards for the degree. Students in the B.A. program must achieve a GPA of 4.0 or better in order to declare the Major and retain standing as a Declared Major at the time of each subsequent Academic Standing evaluation. Students in the B.A. (Honours) program must achieve a GPA of 6.0 or better (6.5 or better if eligible for Fourth-year standing) to declare the Major and to retain standing as a Declared Major at the time of each subsequent Academic Standing evaluation.

### Major programs subject to enrolment limitations

Acceptance into, and continuation in programs subject to enrolment limitations, is governed by standards which are set out in detail in the relevant departmental entries. Currently the programs subject to limitations are Business, Humanities, International Business, Journalism, Mass Communication, Music, Public Administration and Social Work.

### 4.8 Standards for Declaration and Continuation in Minors and Concentrations

Acceptance into these program options is subject to any specific requirements of the intended Minor or Concentration as published in the relevant Calendar entry. Students declaring more than one program option must meet the requirements in each. Students must be in Good Standing to declare any program option.



### Program options not subject to competitive entry

To be accepted into a Minor or Concentration program option not subject to competitive entry, students who are eligible for First-year Standing (see 3.4) must declare the Minor or Concentration at their Registrarial Services office. Students who are eligible for Second-year or higher standing (see 3.4) must have completed at least a course leading to the desired program option or must be enrolled in such a course.

If a GPA for the program option can be calculated, that GPA must be 4.0 or better in order to declare the program option and to retain standing in the program option at the time of each subsequent Academic Standing evaluation.

### Program options subject to competitive entry

Acceptance into, and continuation in program options subject to competitive entry, is governed by performance standards which are set out in detail in the relevant departmental entries. Normally, a program GPA of 6.5 or better is required to declare and to retain standing in a competitive entry program option. Currently the program options subject to competitive entry limitations are the Minors in Business, Canadian Studies, Geographic Information Processing, Education, Linguistics, Japanese and Mass Communication, and the Concentrations in Business Law, Law, Policy and Government and Geographic Information Processing.

## 4.9 The Honours Paper or Research Essay

### General

Although the scope of the Honours Paper or Research Essay should not exceed what the student can reasonably expect to complete within an academic session (either Fall/Winter or Summer), up to two re-registrations are permitted in consecutive sessions. If the Honours Paper or Research Essay is not completed within three consecutive sessions, whether or not registration occurred in all three, a grade of *F* will be assigned.

The first re-registration is optional for students whose Honours Papers or Research Essays are still outstanding at the beginning of the second session. Students should note, however, that they are not eligible for supervision or library privileges, may not submit an Honours Paper or Research Essay for grading, and may not graduate if they are not registered.

The second re-registration is compulsory for students whose Honours Papers or Research Essays are still outstanding at the beginning of the third session. To avoid such re-registration students must either:

- (a) withdraw from the Honours program, notifying their Registrarial Services office of their intention in writing, no later than the last date for late registration; or
- (b) notify their Registrarial Services office of intention to complete the Honours program by means of appropriate alternative courses approved by the Honours supervisor.

For the initial registration, the fee per credit applies. For each re-registration the fee per half credit applies.

### Deadlines for Submission of the Honours Paper or Research Essay

The deadline for submission of the Honours Paper or Research Essay is the last day for handing in term assignments for the session of registration, subject to any earlier course deadline (see the schedule for the Academic Year, p. 12).

Students who are in their initial registration or their optional first re-registration, and who have not applied to graduate, may submit the Honours Paper or Research Essay no later than the last day of the examination period for the session of registration (see the schedule for the Academic Year, p. 12).

If the Honours Paper or Research Essay is not submitted by the appropriate deadline, a notation of *IP* will be assigned for those stu-

dents eligible to re-register. A grade of *F* will be assigned for those students not eligible to re-register.

### Withdrawal

Students may withdraw from the Honours Paper or Research Essay up to the last date for withdrawal from full courses in the session. Students who withdraw during their initial registration or first re-registration may retain standing in the Honours degree program. Students who withdraw from the second re-registration will forfeit standing in the Honours degree program, unless they simultaneously transfer to another course or courses that meet Honours requirements. Students who withdraw from the Honours program will automatically be withdrawn from the Honours Paper or Research Essay.

### Reinstatement

Students who fail to complete the Honours Paper or Research Essay successfully within the three consecutive sessions permitted will forfeit Honours status, but may apply to the Joint Committee on Admissions and Studies for reinstatement in the Honours program. Reinstatement is not guaranteed. The department may require such students to begin a new project. Reinstated students will pay a full registration fee.

### Eligibility to Graduate

Some units require that students meet a published minimum grade in the Honours Paper or Research Essay in order to establish eligibility to graduate in the Honours degree program. See departmental listings for details.

## 5.0 Academic Standing

### 5.1 Standing in Courses

Standing in courses is shown on the academic record by alphabetical grades as described on p. 48.

(a) In addition, the following symbols apply in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management:

*Abs*

Absent from formally scheduled final examinations where the necessary term work has been completed. (See also 5.4.)

*Aeg*

Pass standing granted on the basis of course work when no further assessment is considered feasible. Aegrotat is granted only by approval of the Joint Committee on Admissions and Studies in response to a student's application. (See also 6.3.)

*Ch*

Credit granted under the Challenge for Credit policy.

*Def*

Final grade deferred for personal or medical reasons with approval of the Joint Committee on Admissions and Studies. This notation must be replaced by a grade within the prescribed time period or it will become to an *F*.

*F*

Failure, no academic credit.

*IP*

Honours Paper or Research Essay is In Progress. (See 4.9.)

*Sat*

Passing performance in courses graded *Sat/Uns*

*Uns*

Failing performance in courses graded *Sat/Uns*



(b) The following symbols serve to identify other courses which do not count towards the current degree in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management.

**Aud**

Audit indicates courses attended but not taken for academic credit.

**ETD**

A course passed prior to graduation but not counted towards the degree.

**FORFEIT**

This designation identifies passed courses for which credit is not given as a result of regulatory decisions.

**NCD**

A course not acceptable for credit towards the current degree.

## 5.2 Academic Standing Categories

Performance of all students will be evaluated regularly to determine whether they are meeting the standards prescribed for continuing in their program. Performance will be classified according to the following three categories:

### Good Standing

Students in Good Standing fully meet the academic standards prescribed for their degree program and are eligible to continue in that program (see 5.7 and 5.8.)

### Probation

Students placed on Probation are deficient with respect to the academic standards prescribed for their degree program. They may continue in their degree program but must clear Probation at the time of their next Academic Standing evaluation (see 5.7 and 5.8.)

### Debarred from Further Study

Students whose performance falls below a minimum standard will be debarred. Students who are debarred will not be eligible to register at Carleton University (see 5.7 and 5.8.)

## 5.3 Schedule of Academic Standing Evaluations after Admission

The first evaluation of Academic Standing will take place at the end of the session of Fall/Winter registration in which students have accumulated a total of at least 4.0 attempts.

Subsequent evaluations will take place at the end of each successive Fall/Winter registration, providing that students have made at least 2.0 attempts since the previous Academic Standing evaluation. Students admitted with advanced standing on the basis of previous post-secondary study will receive an Academic Standing evaluation providing that they have made at least 4.0 attempts since admission.

Students who have been granted Deferrals in one or more courses may have their Academic Standing evaluation postponed to the end of the Summer session. Grades earned in the Summer Session will not affect Academic Standing evaluations postponed because of Deferral.

## 5.4 Attempts

Every grade which appears on the official transcript or credit which appears on the Statement of Standing on Admission constitutes an attempt (see 5.1). Attempts are weighted according to the credit value of the course. Courses accepted for transfer of credit and taken on a Letter of Permission (see 3.12) are attempts as are courses noted as *ETD*.

Honours Paper or Research Essay grades of *IP* and unsuccessful Challenges for Credit are not attempts, nor are courses with the notations *NCD*, *Aud* or *Wdn*.

Unsuccessful attempts are grades not counting towards the degree and not designated as either *NCD* or *ETD*. All of the following failures are unsuccessful attempts: grades of *Uns*, *Abs*, *F* (or *FNS*, no longer given); failed courses taken on a Letter of Permission. The following forfeitures are also unsuccessful attempts: grades forfeited as a result of Probation (see 5.7 and 5.8); grades forfeited through preclusion; grades forfeited on admission as recorded on the Statement of Standing on Admission; grades which are replaced through Grade-raising examinations (no longer given) or course repetition, including repetitions in courses taken on a Letter of Permission.

## 5.5 Limit on Unsuccessful Attempts

Students in the B.A. program may not accumulate more than 8.0 unsuccessful attempts (including those on the Statement of Standing on Admission) in the process of earning their degree. Students who accumulate more than 8.0 unsuccessful attempts will be debarred.

Students in Honours programs may not accumulate more than 6.0 unsuccessful attempts (including those on the Statement of Standing on Admission) in the process of earning their degree. Students who accumulate more than 6.0 unsuccessful attempts must withdraw from Honours and may be debarred if they cannot transfer to the B.A. program.

Students in 5.0 or 6.0 credit certificate programs may not accumulate more than 2.0 unsuccessful attempts (including those on the Statement of Standing on Admission) while earning their certificate.

## 5.6 Continuation Index (CI)

Academic Standing evaluations will be based in part on the Continuation Index, the CI. The CI begins on admission to a degree program in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management and continues until a student graduates or transfers to another degree program, except in the case of students transferring between the B.A. and B.A. (Honours) degree programs. Special rules apply in the case of students placed on Probation (see 5.7 and 5.8).

The CI is calculated by dividing the total grade points accumulated over all attempts by the total number of attempts (see 5.4). The calculation is carried to two decimal places and is not rounded.

Since the passing grades of *Ch*, *Sat* and *Aeg* and credits obtained through Letters of Permission do not generate grade points, courses with these grades and the attempts associated with them will be ignored in the calculation of the CI. Audited courses, grades of *IP*, notations of *Wdn* and the 0.0 credit required courses in Music are also ignored in the calculation of the CI.

## 5.7 Academic Standing in the B.A. Program

### Good Standing

Students in the B.A. program will be in Good Standing at the time of any Academic Standing evaluation if:

- (a) their CI over all attempts is at least 4.00; and
- (b) they have accumulated no more than 8.0 unsuccessful attempts; and
- (c) when eligible for Second-Year or higher Standing (see 3.4), they are Declared Majors and have a GPA of 4.0 or more in each Major.



## Probation

Students in the B.A. program will be placed on Probation at the time of any Academic Standing evaluation if their CI is less than 4.00 but greater than 1.00. Students not in First Year are eligible for Probation only if they are Declared Majors.

Students placed on Probation will immediately forfeit all passed courses with grades of less than C- accumulated during the evaluation period which resulted in Probation. Students on Probation are not eligible to participate in exchange programs or to study abroad, are not eligible for Letters of Permission and are not eligible to declare program options.

Students on Probation must clear Probation at the time of their next Academic Standing evaluation by attaining Good Standing. This requires being a Declared Major (if students are eligible for Second- or higher Year Standing (see 3.4)) as well as achieving a CI of 4.00 or more over all attempts accumulated during the period of Probation. Students failing to meet these standards will be Debarred.

The CI for all subsequent evaluations concerning academic standing and graduation in the students' degree program will be calculated over the attempts accumulated after being placed on Probation. Unsuccessful attempts accumulated prior to the Probation decision will continue to be counted in the total allowed for the degree (see 5.5).

Students may not go on Probation more than once. If their CI falls below 4.00 a second time, students will be Debarred.

## Debarred from Further Study

Students in the B.A. program will be Debarred at the time of any Academic Standing evaluation, if any of the following is true:

- (a) their CI is less than 1.00; or
- (b) having previously been placed on Probation, they fail to obtain Good Standing; or
- (c) having cleared Probation, they subsequently fail to maintain Good Standing; or
- (d) they accumulate more than 8.0 unsuccessful attempts; or
- (e) when eligible for Second Year Standing (see 3.4), they are not a Declared Major and fail to qualify for permission to register Undeclared; or
- (f) when eligible for Third-Year or higher Standing (see 3.4), they are not a Declared Major, or having lost standing as a Declared Major in one area of study, they do not qualify to declare another Major.

## 5.8 Academic Standing in the B.A. (Honours), B.Com., B.Hum., B.I.B., B.J, B.Mus., B.P.A. and B.S.W. Programs

*Note:* Students in the B.Com., B.Hum., B.I.B., B.J. and B.P.A. programs should note that these programs have established different criteria regarding entry, continuation and degree program transfer. Consult the relevant listings for details.

## Good Standing

Students in Honours programs will be in Good Standing at the time of any Academic Standing evaluation if:

- (a) their CI over all attempts is 5.00 or better in B.A. (Honours) and B.Mus. and 6.0 or better in B.Com., B.Hum., B.I.B., B.J., B.P.A. and B.S.W. programs; and
- (b) they have accumulated no more than 6.0 unsuccessful attempts; and
- (c) when eligible for Second- or Third-year Standing (see 3.4), they are Declared Majors and have a GPA of 6.0 or more in each Major (a GPA of 6.5 or more is required of Third-year students in the B.I.B.); or

- (d) when eligible for Fourth-year Standing (see 3.4), they are Declared Majors and have a GPA of 6.5 or more in each Major.

## Loss of Good Standing in Honours

### Disciplines offered as separate degrees

Students who are removed from the disciplines offered as separate degrees must apply to the Office of Admissions to determine eligibility for admission to the B.A. and B.A. (Honours) degree programs.

## B.A. (Honours)

### (a) Transfer to the B.A. program

In most circumstances, it is advantageous for B.A. (Honours) students to accept transfer to the B.A. program, if they receive an unfavourable Academic Standing evaluation. Students whose performance meets or exceeds the minimum standards for continuation in the B.A. program will normally be transferred to that degree program and will receive an Academic Standing evaluation based on the criteria for that degree program.

### (b) Probation in Honours

In rare circumstances, it is to the students' advantage to undertake Probation in Honours. This choice is only available to students whose CI is greater than or equal to 4.00 and who qualify to be a Declared Major.

Students who choose to be placed on Probation in Honours will immediately forfeit all passed courses with grades of less than C (in B.A. (Honours), C+ in other Honours programs) accumulated during the evaluation period which resulted in Probation. Students on Probation are not eligible to participate in exchange programs, and are not eligible for Letters of Permission, and cannot declare any program options.

Students opting for Probation in Honours must contact both their Major Department and their Registrarial Services office for advice and must file a formal request for this status with their Registrarial Services office.

The CI for all subsequent evaluations concerning Academic Standing and Graduation in the students' degree program will be calculated over the attempts accumulated after being placed on Probation. Unsuccessful attempts accumulated prior to the Probation decision will continue to be counted in the total allowed for the degree (see 5.5).

## Clearing Probation in Honours programs

Students who are on Probation in Honours programs must clear Probation at the time of the next Academic Standing evaluation by attaining Good Standing. This requires achieving an appropriate CI (5.00 or better in B.A. (Honours) and B. Mus. programs and 6.00 or better in the B.S.W. program) over all attempts accumulated during the period of Probation, as well as retaining status as a Declared Major. Students failing to meet this standard will be evaluated for transfer to the B.A. program. If their performance during the Probation period meets or exceeds the minimum required for Good Standing in the B.A. program and if they qualify to be a Declared Major, they will be placed in Good Standing in the B.A. program. Otherwise, they will be Debarred.

Students in Honours programs who undertake Probation may not go on Probation again. If the CI falls below the cutoff a second time, students will be Debarred unless they can transfer to the B.A. program in Good Standing, with a Declared Major.

*Note:* The regulations governing progress towards the degree for students transferring from one degree program to another (e.g., B.A. (Honours) to B.A.) will be those in effect at the first registration following the transfer (see 2.4).



## Debarred from Further Study

Students in the Honours programs will be Debarred at the time of the Academic Standing evaluation, if they do not qualify for transfer to the B.A. program and if any of the following are also true:

- (a) their CI would result in Debarment if they transferred to the B.A. program; or
- (b) having been placed on Probation in Honours, they fail to achieve Good Standing in Honours at the time of the next Academic Standing evaluation; or
- (c) having cleared Probation in Honours, they subsequently fail to maintain Good Standing; or
- (d) they accumulate more than 6.0 unsuccessful attempts; or
- (e) when eligible for Second-Year Standing (see 3.4), they are not a Declared Major and fail to qualify for permission to register Undeclared; or
- (f) when eligible for Third- or Fourth-Year Standing (see 3.4), they are not a Declared Major, or having lost standing as a Declared Major, they do not qualify to declare another Major.

## 5.9 Readmission after Debarment

After a one-year absence from post-secondary studies, students who have been debarred may petition the Joint Committee on Admissions and Studies for readmission to the University. Each case will be considered individually on its merits and readmission is not guaranteed.

## 5.10 Accelerated Progress

Students admitted to Qualifying-University year may have some or all of the courses taken in Qualifying-University year count toward the degree if they:

- (a) have completed at Carleton one year's full-time study;
- (b) have no failures, supplemental or grade-raising examinations (no longer offered) on their record; and
- (c) present a GPA of 7.0 or better on 5.0 credits or a total of 35 grade-points.

## 6.0 Examinations

General regulations on examinations are on p. 49. In addition the following regulations apply to students in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management.

### 6.1 Supplemental and Grade-Raising Examinations (no longer offered)

The Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management no longer provide supplemental or grade-raising examinations in any courses offered in their departments and other academic units. No student registered in a degree governed by the regulations of these Faculties may write a supplemental or grade-raising examination in any course counting towards the degree.

### 6.2 Deferred Examinations and Final Papers

Students who are unable to write a final examination or complete a final paper because of illness or other circumstances beyond their control or whose performance on an examination has been impaired by such circumstances may apply within five working days to the Registrarial Services office for permission to write a deferred examination or to extend a term paper deadline. Permission can be granted only if the request is fully and specifically supported by a medical certificate or other documents.

Deferred examinations are not granted to students who make travel plans that conflict with the examination period.

Deferred final papers are normally given a one month extension.

Students who have been granted Deferred examinations in one or more Fall/Winter courses may have their Academic Standing evaluation postponed to the end of the Summer session. Grades earned in the Summer Session will not affect Academic Standing evaluations postponed because of Deferral.

### 6.3 Aegrotat

Application for Aegrotat standing (*Aeg*) must be made to the Registrarial Services office, and will be granted in exceptional circumstances only where no other assessment is considered feasible and only if term work has been of high quality. *Aeg* indicates only a passing standard.

### 6.4 Review of a Grade

A review of a grade may raise or lower a grade, or leave it unchanged. A review may only be requested when reasonable grounds exist to believe that the grade received is incorrect.

A request for review of term work is made to the instructor assigned to the course and the request can apply to any or all assignments, tests and other evaluations for which grades are available before the last day of classes. The request must be made within 14 days of the return of the graded work and in any case, before the last day of classes.

A review of a final grade is limited to review, by the instructor, of final examinations and final term papers returned after the last day of classes. Students must apply at their Registrarial Services office within the deadlines specified under Academic Year, (p.12). A fee is charged, refunded if the grade is raised.

### 6.5 Appeal of a Grade

If the process of Review (see 6.4) has not resolved the concerns or if Review is not appropriate, and where reasonable grounds exist which suggest uncorrected error in the grade assigned by an instructor, then an appeal of a grade may be made to a Chair/Director or to the Dean. An appeal is specific to the grade on a given piece of work, and more than one such grade may be appealed. An appeal must be submitted within 14 days of the return of the graded work. Reconsideration of written work in the course will be assigned by the Chair/Director or Dean to at least one qualified reader other than the instructor.

### 6.6 Repeated Courses

Students may repeat a course for which they have received a passing grade. The grade awarded on the repetition will be considered to be the final grade whether higher or lower than the original grade. Both grades, however, will be included in the calculation of the CI. Only the last attempt, if successful, will be included in the calculation of the GPA. If the second attempt is unsuccessful, neither attempt will be included in the calculation of the GPA.

## 7.0 Graduation

### 7.1 Application to Graduate

Completed applications for graduation must be received in the Registrarial Services office no later than February 1 for Spring graduation, September 1 for Fall graduation, and December 1 for Winter graduation.

See also University Graduation Requirements, p. 49.

### 7.2 Graduation Requirements, B.A. Degree

Candidates for Graduation must have the following:



- (a) 15.0 credits, not including any credits used to meet Qualifying-University year requirements; and
- (b) 3.0 credits which meet the requirement for Breadth, with 1.0 in each of three of the four breadth areas (1.0 of these credits may be in the Major); and
- (c) a CI of at least 4.00; and
- (d) a GPA of 4.0 or better in each Major; and
- (e) a minimum GPA as required by any program option; and
- (f) credits which fulfill the program requirements of the Major(s) and any program options (consult the departmental entries); and
- (g) a minimum of 8.0 credits beyond the 100-level; and
- (h) no more than 8.0 unsuccessful attempts; and
- (i) sufficient Carleton credits to meet the Residence requirements (see 3.11).

In addition, students must be recommended by their Major department(s) and units offering any competitive entry program options in which they are enrolled.

### 7.3 Graduation with Distinction

To qualify for graduation with Distinction, students in the B.A. degree program must:

- (a) have maintained Good Standing throughout their degree studies; and
- (b) present a minimum of 10.0 credits taken at Carleton; and
- (c) achieve a special average for purposes of Distinction of at least 9.5. This special average will be calculated by dividing the grade-points accumulated over all successfully completed, graded courses presented for the degree by the number of credits obtained; and
- (d) complete the B.A. program within a maximum of 17 attempts, except as noted below.

If the student's record contains attempts beyond the 17.0 permitted, the procedure for calculating the special average is modified to include some of the additional attempts, as follows. The grade-points earned in all attempts (successful and unsuccessful) not counting towards the degree are used to place the attempts in order. The grade-points associated with the lowest 2.0 attempts are excluded from the average, while all remaining grade-points and their associated credits are included.

### 7.4 Graduation Requirements, B.A. (Honours), B.Com., B.Hum., B.I.B., B.J., B.Mus., B.P.A., and B.S.W.

Candidates for Graduation must have the following:

- (a) 20.0 credits not including any credits used to meet Qualifying-University year requirements; and
- (b) for B.A. (Honours) only: 4.0 credits which meet the requirement for Breadth, with 1.0 in each of three of the four breadth areas, the fourth from any area — one of these credits may be in a Major; and
- (c) the required CI (5.00 or better in B.A. (Honours) and B.Mus., 6.00 or better in the other degrees); and
- (d) a minimum GPA of 6.5 in each Major; and
- (e) a minimum GPA required by any program option; and
- (f) credits which fulfill the program requirements of the Major(s) and any program options (consult departmental entries); and
- (g) a minimum of 11.0 credits beyond the 100-level, 13.0 in B.Com. and in B.A. (Honours) programs in Mathematics and Statistics (no longer offered); and
- (h) no more than 6.0 unsuccessful attempts; and
- (i) sufficient Carleton credits to meet the Residence requirements (see 3.11).

In addition, students must be recommended by their Major department(s) and units offering any competitive entry program options in which they are enrolled.

### 7.5 Classes of Honours

#### Graduation averages in Honours

For students graduating in Honours degree programs, the courses which are counted in the overall graduation average will be all those successfully completed courses which are used to meet the degree requirements as published in the calendar which governs a student's progress towards the degree. The Major graduation average will be calculated over successfully completed courses in the Major. For specific details of these procedures, consult the Major department(s).

Three classes of Honours degree are awarded according to the graduation averages attained:

- (a) Highest Honours: 10.0 or better in the Major and 8.0 or better overall.
- (b) High Honours: 9.0 or better in the Major and 7.0 or better overall.
- (c) Honours: 6.5 or better in the Major and 5.0 or better overall.

Departments may recommend the next higher class of Honours degree when a student has one average in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of Honours degree for students in Honours programs with a Combined Major, the simple average of the two Major averages is used.

### 7.6 "Mention: français"

Students registered in certain B.A. and B.A. (Honours) programs may earn the notation "Mention: français" by completing part of their requirement in French and by demonstrating a knowledge of the history and culture of French Canada. The general requirements are as follows. For more specific details consult the departmental entries.

Students in a B.A. (Honours) program must present 1.0 credit in French language and 1.0 credit devoted to the history and culture of French Canada. In addition, 1.0 200- or 300-level credit and 1.0 400-level credit in the Honours discipline must be taken in French.

Students in a B.A. program must present 1.0 credit in advanced French and 1.0 credit devoted to the history and culture of French Canada. In addition, 1.0 200- or 300-level credit in the Major discipline must be taken in French.

Students in Combined programs must fulfill the "Mention: français" requirement in both disciplines.

Courses taught in French in the Major may be taken at Carleton, at the University of Ottawa on the Exchange Agreement (see 3.8), or at a francophone university on a Letter of Permission (3.10). Students planning to take courses on exchange or on a Letter of Permission should take careful note of the residence requirement for a minimum number of Carleton courses in their 3 year or Honours programs (3.13).

## 8.0 The Qualifying-University Year

### 8.1 Qualifying-University Year

Over the course of the degree, students in Qualifying-University year must present 5.0 credits in addition to the regular degree requirements. 2.0 of the 5.0 credits must include:

- (a) a 100-level course in English;
- (b) Mathematics 69.007★ and 69.017★;
- (c) a language other than English.

Students planning to apply for admission to other programs (i.e., B.J., B.Mus., B.Com.) should ensure that they take appropriate



prerequisite courses. All Qualifying-University year students should familiarize themselves with the provisions for Accelerated Progress and ensure that their choice of courses will permit them to proceed into Second-year should they qualify. (see also 5.11)

## 8.2 Course Selection

Subject to the provisions of 8.1 and placement requirements, Qualifying-University and First-years students can choose 100-level courses from all departments in Arts and Social Sciences, Public Affairs and Management, and Science.

While the University makes every effort to allow students to enrol in courses of their choice, enrolments may have to be limited in certain of the more popular courses.

## 9.0 First-Year Seminars

The following is a list of all First-Year Seminars, listed alphabetically by academic unit:

### *Art and Culture*

First-Year Seminar in Art and Culture 01.101

#### **Reading Art and Culture**

Development of academic writing and study skills through a close analysis of individual works and an examination of theories, aesthetic issues, and critical perspectives found in the literature of music, art history and film studies. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminar three hours a week.

### *Central/East European and Russian-Area Studies*

First-Year Seminar in Central/East European and Russian-Area Studies 01.102

#### **Social Impact of Transformation in the Post Communist Era**

Political, economic and social changes that have accompanied the collapse of the Berlin Wall. The role of society in these political upheavals and the impact of the end of the Cold War on reform in Western and developing countries. Limited enrolment. (Also listed as First-Year Seminar in Political Science 01.133.)

Precludes additional credit for Political Science 47.113★ and East European Studies 55.113★.

Prerequisite: Normally restricted to students entering the First year of a B.A. Program.

Seminars three hours a week.

### *Classics*

First-Year Seminar in Classics 01.116

#### **Issues in Classical Civilization**

An investigation of important issues relating to the Greek and Roman world. Themes will be drawn from literature, history, art, religion and social life. All texts are in English.

Precludes additional credit for Classical Civilization 13.100, 13.102★, 13.103★.

Seminars three hours a week.

### *Economics*

First-Year Seminar in Economics 01.103

#### **Introduction to Economics**

Introduction to the major tools and policy problems of economics. Economic analysis is applied to a variety of contemporary problems such as pollution, poverty, the control of monopoly, unemployment, inflation and international economic problems. Limited enrolment.

Precludes additional credit for Economics 43.100.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Lectures three hours a week and one hour discussion group weekly.

## *English Language and Literature*

First-Year Seminar in English 01.104

#### **Survey of English Literature**

Historical study of selected authors and works from all periods of British Literature. Communication skills are emphasized.

Limited enrolment.

Precludes additional credit for English 18.100

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

First-Year Seminar in English 01.105

#### **Writing and Language**

The essay and essay writing. Communication skills are emphasized. Limited enrolment.

Precludes additional credit for English 18.105.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

First-Year Seminar in English 01.106

#### **Twentieth-Century Literature**

Selected authors and works from twentieth-century literature.

Recommended for English majors. Limited enrolment.

Precludes additional credit for English 18.162.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

### *French*

First-Year Seminar in French 01.117

#### **French II**

Enrichment of written and oral skills with special emphasis on the intellectual interaction between the students and the instructor.

Texts from various cultural areas to reinforce language skills. Compulsory attendance. Limited enrolment.

Precludes additional credit for French 01.108, 20.140, 20.145, 20.150, 20.160.

Prerequisite: three to four years of High School French or French Placement. Normally restricted to students entering the First year of a B.A. Program.

Seminars three hours a week.

First-Year Seminar in French 01.108

#### **French III**

Enrichment of written and oral skills with special emphasis on the intellectual interaction between students and instructor. Texts from the areas of literature and culture to reinforce language skills. Compulsory attendance. Limited enrolment.

Precludes additional credit for French 10.117, 20.140, 20.145, 20.150 and 20.160.

Prerequisite: OAC in French or French Placement. Normally restricted to students entering the First year of a B.A. Program.

Seminars three hours a week.

### *Geography*

First-Year Seminar in Geography 01.109

#### **Maps and Mapping**

An examination of our spatial perspective of the world; the evolution of cartography and mapping. Field mapping techniques, data acquisition and map production principles; the interface with geographic information processing fields. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

First-Year Seminar in Geography 01.110

#### **It's Your Environment**

The causes and consequences of environmental change; emphasis on the interactions of nature and human behaviour. Ways in which the environment can be protected and restored. Environmental issues that affect our own communities. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

#### First-Year Seminar in Geography 01.111

##### **Location is Everything**

Where we live affects who we are; the role of geographic location and environment on human perception, behaviour, and well-being, viewed at scales ranging from local to global; methods of collecting and interpreting information about location. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

### **History**

#### First-Year Seminar in History 01.112

##### **History of Western Civilization**

Major events, ideas and movements that have shaped western civilization from the fall of Rome to the twentieth century. Emphasis on the development of writing, research and analytical skills. Limited enrolment.

Precludes additional credit for History 24.101.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures two hours a week, seminar two hours a week.

#### First-Year Seminar in History 01.113

##### **Introduction to Canadian History**

Historical study of the political, economic and social development of Canada with emphasis on the twentieth century. The seminar emphasizes the development of writing, research, and analytical skills. Limited enrolment.

Precludes additional credit for 24.130.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures two hours a week, seminar two hours a week.

#### First-Year Seminar in History 01.145

##### **Turning Points in Modern History**

Seminars emphasizing the development of writing, research, and analytical skills through the intensive examination of selected topics in modern history (e.g., the Italian Renaissance, the French Revolution, the impact of science, industrialization, the origins of the world wars.) Limited enrolment.

Prerequisite: Normally restricted to students entering the first year of a B.A. program.  
Precludes additional credit for 24.100.  
Seminars three hours a week.

### **Human Rights**

#### First-Year Seminar in Human Rights 01.114

##### **Human Rights: Issues and Investigations**

Arguments that have been used to defend differing positions on rights issues, past and present. The validity of contending arguments; social factors influencing wide-spread acceptance of particular views. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

### **Interdisciplinary Studies**

#### First-Year Seminar in Interdisciplinary Studies 01.115

##### **Reading the Web**

Academic writing and study skills through examination of the literacy and social interaction required for various media. Reading and writing on and for the Web and other forms of computer-mediated communications and cooperative work compared with writing for academic purposes. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

### **Law**

#### First-Year Seminar in Law 01.118

##### **Law and Cyberspace**

Law and the challenges posed by new technologies of the information society. Topics include the Internet and freedom of expression, pornography, hate speech, privacy, confidentiality, regulation of communications media, access to information and intellectual property; impact on democracy, national sovereignty, equality, and individual rights. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

#### First-Year Seminar in Law 01.119

##### **Law and Literature**

Reading literature to explore how law is perceived and understood by society in which it operates; examination of assumptions and concerns about role of law, lawyers, judges and other participants in the legal system through study of fiction dealing with significant legal and moral issues. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

#### First-Year Seminar in Law 01.120

##### **Law and Dispute Resolution**

Approaches to the legal resolution of disputes in both a theoretical and empirical context. The theory and practice of adjudication and mediation compared. Methodological differences between these processes for resolving disputes; theories of justice which underlie each process. Limited enrolment.

Prerequisite: Normally restricted to students entering the First-year of a B.A. program.  
Seminars three hours a week.

#### First-Year Seminar in Law 01.121

##### **Governance and the Rule of Law**

The historical development and theoretical foundations of the modern concept of the rule of law. The contradictions between theory and legal practice as illustrated in the discretion exercised in the administration of criminal justice and in environmental regulation. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

#### First-Year Seminar in Law 01.122

##### **Global Governance and Human Rights**

The legal implications of a shift from an emphasis on the sovereignty of the nation-state to governance through international or transnational institutions and non-governmental organizations. The role played by human rights to ensure that this governance will be democratic. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

### **Linguistics and Applied Language Studies**

#### First-Year Seminar in Linguistics and Applied Language Studies 01.123

##### **Introduction to Academic Language and Culture**

Language as it is related to disciplinary enquiry; the language and culture of a variety of disciplines. Intended to enhance students' abilities to understand and acquire the culture, language, and conventions of their own disciplines. Limited enrolment.

Precludes additional credit for Linguistics and Applied Language Studies 29.185★.  
Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures three hours a week.



First-Year Seminar in Linguistics and Applied Language  
Studies 01.124

**Language and Social Identity**

The creation and expression of social identities through language: gender, age, ethnic and social background. Limited enrolment. Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures three hours a week.

First-Year Seminar in Linguistics and Applied Language  
Studies 01.125

**Language and Power**

The role of language in maintaining and contesting power relations in domains such as the media, education, advertising, and politics. How meanings are made and exchanged through language in different situations. Limited enrolment. Precludes additional credit for Linguistics and Applied Language Studies 29.275★.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures three hours a week.

First-Year Seminar in Linguistics and Applied Language  
Studies 01.126

**Intensive Introductory Linguistics**

Language as the defining human characteristic. Universal and specific linguistic features in language of adults, children and second-language learners. Limited enrolment. Precludes additional credit for Linguistics and Applied Language Studies 29.100.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures three hours a week.

**Mass Communication**

First-Year Seminar in Mass Communication 01.127

**Introduction to Mass Communication**

The emergence of mass communication studies in the 20th century; the major incidents and events which shaped our views of and attitudes towards communication and the media. Limited enrolment.

Precludes additional credit for Mass Communication 27.111.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Lectures three hours a week.

**Philosophy**

First-Year Seminar in Philosophy 01.128

**Looking at Philosophy**

An examination of the following: What is logical thinking? Does God exist? Are values relative? Do we have responsibilities? What is a just society? Do we have free will? What is the mind? What is the nature of reality? Limited enrolment.

Precludes additional credit for Philosophy 32.110.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

First-Year Seminar in Philosophy 01.129

**Contemporary Moral, Social and Religious Issues**

Philosophical problems associated with such topical issues as feminism; atheism vs. Theism; the meaning of life; moral relativism vs. moral objectivism; egoistic vs. non-egoistic ethics; euthanasia and capital punishment; legal paternalism; freedom of the will. Limited enrolment.

Precludes additional credit for Philosophy 32.150.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

First-Year Seminar in Philosophy 01.130

**History of Philosophy**

The major figures and developments in philosophy from the early Greeks to the present. A primarily descriptive and comparative

approach, though critical reasoning is included for comprehending philosophical developments. Provides a background from which to understand the philosophical aspects of other disciplines. Limited enrolment.

Precludes additional credit for Philosophy 32.160.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

**Political Science**

First-Year Seminar in Political Science 01.131

**Global Political Cultures**

The political role of culture in a global context. The integral role of architecture, art, landscape and film in legitimating, popularizing and propagating political endeavours. The imperialism of cultural exchanges between developed and developing countries. Limited enrolment.

Precludes additional credit for Political Science 47.111★.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

First-Year Seminar in Political Science 01.132

**North American Politics**

A comparative examination of North American political institutions and continental economic integration. Special attention to the political implications of economic integration. Limited enrolment.

Precludes additional credit for Political Science 47.112★.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

First-Year Seminar in Political Science 01.133

**Social Impact of Transformation in the Post Communist Era**

Political, economic and social changes that have accompanied the collapse of the Berlin Wall. The role of the society in these political upheavals and the impact of the end of the Cold War on reform in Western and developing countries. Limited enrolment.

Precludes additional credit for Political Science 47.113★, East European Studies 55.113★ and 01.102.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

First-Year Seminar in Political Science 01.134

**Politics of Race**

Meaning, sources and practice of racialism, as well as efforts to combat it, in a comparative context. Case studies include South Africa, the United States, and Canada. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

First-Year Seminar in Political Science 01.135

**Politics of Famine and Disease**

Political, economic, social and ecological dimensions of hunger, famine and disease around the world. Limited enrolment.

Precludes additional credit for Political Science 47.115★.  
Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

**Psychology**

First-Year Seminar in Psychology 01.136

**Diversity in Psychological World Views**

Theories, research, and applications of Psychology from the perspective of different cultures and subcultures. The validity of Psychology across society: how it defines and changes people, and how it reflects and engineers particular social values and norms. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.  
Seminars three hours a week.

**First-Year Seminar in Psychology 01.137****Psychology and Criminal Justice**

Theories, research, and practical applications of Psychology to the criminal justice system. Topics may include eyewitness testimony, prediction of violence, classification and rehabilitation of offenders, victim studies, and judicial decision making. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

**First-Year Seminar in Psychology 01.138****Motivating Humans**

The psychology of human motivation. Everyday concepts such as laziness in relation to diverse theories and explanations of motivation such as drive-reduction, sociobiology, personal goals, self-actualization and spiritual awareness. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

**First-Year Seminar in Psychology 01.139****Parents and Parenting Theories, Concepts and Applications from Developmental Psychology**

Parents and parenting from infancy to adolescence. Potential topics include: establishing a relationship with your child, child discipline, historical perspectives, child care issues, and the impact of marital conflict and divorce. Applied issues relevant to parents and "future" parents. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

**First-Year Seminar in Psychology 01.140****Cognition: A Scientific Exploration of the Mind**

Theories, research, and applications of Cognitive Psychology. Research projects will familiarize students with the scientific method used to study pattern recognition, attention, memory, language and thinking. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

**Social Sciences****First-Year Seminar in Social Sciences 01.144****Introduction to Social Sciences**

Introduction to the disciplines comprising the social sciences. Topics include: social sciences and the University, the social scientist in the community, research methods and practice, interdis-

ciplinary approaches to social problems, and information technology in the social sciences. Writing process, problem-solving and critical thinking skills are emphasized

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Lectures two hours a week, workshops two hours a week.

**Sociology and Anthropology****First-Year Seminar in Sociology and Anthropology 01.141****Multiculturalism in Canada**

Issues relating to the development of and interaction among cultural communities with major emphasis on the realities of "doing multiculturalism in Canada." Research teams; organized seminars with volunteers from Canadian cultural and community groups. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

**Women's Studies****First-Year Seminar in Women's Studies 01.142****Issues in Women's Studies**

Emphasis on the development of writing, research and analytical skills through the intensive examination of selected topics in women's studies (e.g. Motherhood, sexuality, health, technology, law, politics). Specific themes will vary from year to year. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.

**First-Year Seminar in Women's Studies 01.143****Women and the Arts**

Feminist research across a range of arts disciplines (including music, theatre, visual arts and film). The importance of feminist debates and theoretical issues in understanding women's involvement in the arts. Topics include gender and sexuality, feminine aesthetics, representation, identity and difference. Limited enrolment.

Prerequisite: Normally restricted to students entering the First year of a B.A. program.

Seminars three hours a week.



# Engineering

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## Academic Administration

**Dean,** To be announced

**Associate Dean,** A.M. Khan

**Assistant Dean,** R.L. Fleming

**Assistant Registrar,** P. Clarke

*Departmental Chairs:*

**Civil and Environmental Engineering,** J.L. Humar

**Electronics,** J.S. Wight

**Mechanical and Aerospace Engineering,** R. Bell

**Systems and Computer Engineering,** S.A. Mahmoud

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## Bachelor of Engineering Degree Program

The Bachelor of Engineering degree is awarded on successful completion of a four-year program of studies with specialization in Aerospace, Civil, Communications, Computer Systems, Electrical, Environmental or Mechanical Engineering. The four-year program comprises common core material emphasizing fundamental mathematical, physical and engineering sciences followed by further study in one of the seven programs. The Environmental Engineering program provides a sound background in environmental engineering and the environmental aspects of chemistry and biology. Several specializations are possible within other Program Options. In Aerospace Engineering, students may select a specialization in Aerodynamics, Propulsion and Vehicle Performance; Aerospace Structures, Systems and Vehicle Design; or Aerospace Electronics and Systems. In Civil Engineering, students may choose either the Program Option or they may choose a Concentration in Management; in Electrical Engineering, students may choose a General Stream or they may specialize in Microelectronics, Systems, or Telecommunications; in Mechanical Engineering, students choose either the Program Option or a Concentration in Computer Integrated Manufacturing.

## Licensing, Registration and Accreditation

Licensing and registration are key words for doctors, for lawyers and for engineers. To practice engineering in Canada as a professional (P. Eng.), a person must be registered (licensed) with his or her provincial or territorial professional engineering association.

In 1965, the Canadian Council of Professional Engineers (C.C.P.E.) established the Canadian Engineering Accreditation Board (C.E.A.B.). This board develops standards for engineering degree programs in Canadian universities and monitors the application of these standards to ensure engineering graduates meet the educational requirements of the profession. Graduates from a C.E.A.B.-accredited program meet the educational requirements for registration in any one of the C.C.P.E.'s 12 federated associations. Most Carleton engineering graduates become registered and licensed with Professional Engineers of Ontario (P.E.O.).

The Aerospace, Civil, Computer Systems, Electrical, Environmental and Mechanical Bachelor of Engineering degree programs are accredited by the Canadian Engineering Accreditation Board.

In addition, the new Communications Engineering and the Engineering Physics programs have been designed for accreditation.

## Admission Requirements

### Qualifying-University Year

The OSSD. A 75 percent average must be presented on a minimum of 10 Advanced credits at Grades 11 and 12, including an appropriate preparation in Chemistry, Physics and Grade 12 Mathematics.

### First Year

The OSSD or the equivalent, including at least six OACs. The six OACs must include the courses Calculus, Algebra and Geometry, Chemistry and Physics with a 70 percent average or better. It is strongly recommended that the remaining OACs include at least one in English or Français.

Possession of the minimum requirement does not guarantee admission. Because of a limit on the number of spaces in the program, preference will be given to applicants with the best academic qualifications. Applicants should be aware that in recent years, the majority of students admitted to the programs offered by the Faculty of Engineering had an average greater than 80 percent.

A student unable to meet the foregoing specific course requirements but otherwise admissible to Carleton University may be admitted, but will be required to satisfy the outstanding requirements at the Qualifying-University year level.

Engineering students are required to make extensive use of computers, and some background in this area prior to admission is a definite asset.

### Enrolment Limitation

Applicants should note that in view of limited human and physical resources, meeting the admission requirements can only establish eligibility for selection to the Faculty of Engineering.

Each student offered admission to the Faculty of Engineering will have a place reserved in at least one of the specialized Program Options: Aerospace, Civil, Communications, Computer Systems, Electrical, Environmental or Mechanical Engineering; this will be confirmed in the letter offering admission. Transfer from one Program Option to another, requested after admission, will be permitted wherever possible. However, the Faculty of Engineering reserves the right to restrict enrolment in each of the foregoing Program Options.

## Advanced Standing

Applications for admission with advanced standing to the program leading to the Bachelor of Engineering degree will be evaluated on an individual basis.

Successful applicants will have individual academic subjects, completed with grades of C- or better, evaluated for academic standing, provided the academic work has been completed at another university or degree-granting college or in another degree program at Carleton University.

## Mature Applicants

Persons who lack the normal entrance requirements as published in this Calendar but who have been away from full-time studies for a minimum of two years and are 21 years of age or over, by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program. See Admissions Section, p. 36 for detailed information.

## Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *itv* refer to p. 64.

## English Proficiency Requirements

### English Placement Test

The University policy governing applicants whose mother tongue is a language other than English is given on p. 32.

## Industrial Experience Program (1998-99)

Students with a cumulative GPA of 7.0 or better may apply to the Industrial Experience Program. Subject to the availability of positions, suitable students may be placed in industry or government, for a period of 12 to 16 months beginning in May following the Third year of the program. Applications must be made in writing to the relevant Departmental Chair before October 1 of Third year.

Students participating in the "Industrial Experience Program", Engineering 91.400, will be required to submit a formal report when entering Fourth year. Engineering 91.400 carries no weight and no course credit.

## Co-operative Industrial Experience Option for Civil and Environmental Engineering and Mechanical and Aerospace Engineering

(General information on Co-op programs can be found on p. 39)

Students in the Bachelor of Engineering (B.Eng.) program in the Departments of Civil and Environmental Engineering and Mechanical and Aerospace Engineering have the opportunity to enrol in a Co-operative Industrial Experience option (co-op option). Students admitted to this option must satisfy the normal requirements for graduation in the B.Eng. program, and, in addition, the graduation requirements specific to the co-op option. See p. 94.

The co-op option is based upon the principle that work experience completed after students have received fundamental instruction in their discipline is a valuable component of a professional education program. The work experience obtained will expose the student to practical issues that will provide greater relevance for materials that are presented in the final year of academic instruction. The practical experience is not a substitute for, but rather complements, academic studies.

## Operation of the Co-op Option

Students wishing to have a co-op option designation on their transcript must participate in a minimum of four work terms with each work term having a duration of four months. The program structure is summarized in the following table:

Calendar Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Work Term 1
2	Study Term 3	Study Term 4	Work Term 2
3	Study Term 5	Study Term 6	Work Term 3
4	Work Term 4	Work Term 5	Work Term 6
5	Study Term 7	Study Term 8	

This format allows flexibility as to when students may start and complete their co-op program. Students may choose any combination of the work terms as long as the total number of work terms is four. Precise start and completion dates are established in consultation with the employer.

## Admission Requirements and Registration Information

Students satisfying the following conditions will be considered admissible to the co-op option subject to a satisfactory interview within the department once they have arrived at the University:

- a) an 80% average or better in core math and science courses from a Canadian high school;
- b) be registered as a full-time student;
- c) be eligible for work in Canada;
- d) have successfully completed an interview.

Students may also apply to the co-op option once they have arrived at the University at any time until the end of their sixth term of study, provided they have a cumulative GPA of 7.0 or better.

Students must maintain a cumulative GPA of 7.0 or better in order to continue in the co-op option.

Note that meeting the above entrance requirements only establishes eligibility for admission to the program. Enrollment in the co-op option may be limited at the discretion of the department.

## Co-op Placement Fee

A placement fee will be charged for each co-op work-term position.

## Employment

Although every effort is made to find a sufficient number of placements for all students admitted to the co-op option, no guarantee of employment can be made. The employment process is competitive, and academic performance, skills, motivation, maturity, attitude and potential will determine whether a student is offered a job.

## Voluntary Withdrawal from the Co-op Option

Students may voluntarily withdraw from the co-op option prior to placement without penalty. Such students are eligible to continue in the regular B.Eng. program provided they meet the academic standards required for continuation in the program. Once students are placed in a work term they may only withdraw from the option with mutual assent of the employer and the Co-op Program Administrator.

## Continuation in the Co-op Option

Once admitted to the co-op option, students must:

- a) maintain full-time status in each study term;
- b) meet the academic standards required to continue in the co-



- op option;
- c) obtain a *Sat* grade in all work-term courses;
- d) accept positions which they have been awarded;
- e) attend all pre-arranged interviews with employers;
- f) pay the work-term placement fee within three months of starting each work-term.
- g) maintain legal eligibility to work in Canada.

Students who fail to meet any of these requirements will be required to withdraw from the co-op option.

Students who are required to withdraw from the co-op option will be eligible to continue in their regular B.Eng. program provided they meet the minimum standards required for continuation in the program.

### Degree Designation

Students successfully completing the requirements for graduation from the co-op option will receive a "B.Eng. (Co-operative Industrial Experience Option)" degree designation.

### Computer Systems Engineering Co-operative Education Option

(General information on Co-op programs can be found on p. 39.)

Students admitted to the Computer Systems Engineering program may be eligible to register in the Co-operative Education Option. The option combines academic study with relevant work term experience.

### Computer Systems (Co-op Option) Third Year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Winter	Summer	Winter	Summer	
69.352★	Probability and Statistics	-	4	-	-	5
91.380★	Engineering Economics	3	-	-	-	4
94.301★	Operating Systems and Data Bases	3	-	-	-	4
94.310★	Systems Analysis	-	3	-	-	4
94.333★	Real-Time Concurrent Systems	-	2	-	3	5
94.351★	Communication Theory	-	3	-	3/2	5
94.360★	Systems and Simulation	3	-	3	-	6
94.361★	Microprocessor Systems	-	3	-	3/2	5
94/97.395★	Professional Practice	3	-	-	-	4
97.350★	Digital Electronics	2	-	3	-	5
		14	15	6	6	47

### Admission to the Option

Students may apply for admission directly into the co-op option when they apply to the Computer Systems Engineering program. Students in the regular Computer Systems Engineering program may apply for entry into the co-op option at either work term 1A or work term 2A. For admission in work term 1A, applications must be submitted no later than the first day of the Winter term of First year. For admission in work term 2A, applications must be submitted no later than the last day for late registration of the Fall term of Second year.

To be eligible for admission in Work Term 1A, students must have:

- a) completed all required First year courses;
- b) obtained a GPA of 9.0 or better in the Fall term of First year, and;
- c) obtained the permission of the Co-op Faculty Advisor.

To be eligible for admission to the co-op option in Work Term 2A, a student must have:

- a) maintained a GPA of 8.0 or better in all study terms;
- b) successfully completed all required First year courses, and;

experience. Students enrolled in this option must complete the normal requirements for graduation, and, in addition, must successfully complete two work terms after Second year, and three work terms after Third year. In addition to meeting the admission requirements, students participating in the option must be full-time students who are legally eligible to work in Canada.

### The Work/Study Sequence

The structure of study and work terms is shown in the table below. The shaded terms are work terms. The summer between First and Second year is an optional work term (not required for graduation with Co-op designation).

Calendar Year	Fall	Winter	Summer
1	study term 1A	study term 1B	option: free/work 1A
2	study term 2A	study term 2B	work term 2A
3	work term 2B	study term 3A	study term 3B
4	work term 3A	work term 3B	work term 3C
5	study term 4A	study term 4B	

All study terms are identical in the co-op and regular options, except for study terms 3A and 3B, whose requirements are given below.

- c) successfully completed all required 94.2xx and all 97.2xx courses, of which at least 2.0 credits were completed at Carleton.

### Continuation in the Option

Once admitted to the co-op option, a student must:

- a) maintain full-time status and a GPA of 8.0 or better in each study term;
- b) complete all courses required in each study term with a GPA of 8.0 or better;
- c) obtain a *Sat* grade in all work term courses;
- d) successfully complete all required courses in study terms 1A, 1B, 2A, and 2B before starting work term 2A;
- e) successfully complete all required courses in study terms 1A, 1B, 2A, 2B, 3A, and 3B before starting work term 3A.
- f) maintain legal eligibility to work in Canada.

Students who fail to meet these requirements will be required to withdraw from the co-op option.

Students who withdraw from the co-op option will be eligible to continue in the regular B.Eng. program in Computer Systems Engineering.

neering provided they meet the minimum academic requirements for the Faculty of Engineering. (See p. 94 ).

### Graduation Requirements

Students who successfully complete all required co-op work term courses in addition to the requirements of the regular Computer Systems Engineering program will be eligible for graduation from the Co-operative Education Option. A Co-operative Education Option designation will appear on the final transcript and diploma.

### Work Term Placement Fee

A placement fee will be charged for each co-op work-term position.

### Work Term Placements

All job placements are subject to demand by industry, and priority will be given to filling placements in Work Term 2A and Work Term 3A. The Engineering and Science Co-op Office will make available a list of job postings, and will schedule the interviews. It is the final responsibility of the student to secure an available position through successful participation in the competitive interview process. Remuneration for work term positions is a matter for negotiation between the student and the employer.

Students may make their own work term placements subject to the prior approval of the Co-op Faculty Advisor. The planned work must have relevant engineering content. Students without placements for Work Term 1A may choose to delay their first placement

### Electrical (Co-op) Option Third Year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Winter	Summer	Winter	Summer	
69.352★	Probability and Statistics	-	4	-	-	5
94.303★	Introduction to Real-Time Systems	-	3	-	2	5
94.351★	Communication Theory	-	3	-	3/2	5
94.360★	Systems and Simulation	3	-	3	-	6
94/97.395★	Professional Practice	3	-	-	-	4
97.315★	Basic EM and Power	3	-	3/2	-	5
97.350★	Digital Electronics	3	-	3	-	5
97.359★	Electronics II	-	3	-	3	6
97.398★	Physical Electronics	3	-	3/2	-	5
97.399★	Electromagnetic Waves	-	3	-	3/2	5
		15	16	9	8	51

### Admission to the Co-op Option

Admission to the co-op option will be offered to those students entering First year Engineering with an average of 85% or better in core math and science courses from a Canadian high school system who are legally eligible to accept employment in Canada. Applications from students who have completed high school in a foreign system will be considered on a case-by-case basis. Late admission may be offered to those who have successfully completed all courses required in the first term of the regular first-year Carleton Engineering program (see p. 92) with an average GPA of 9.0 or better.

Students transferring to Electrical Engineering from other university programs may be eligible for entry to the Co-op option after successfully completing all required courses in the regular first-

until Work Term 2A. Students without placements in Work Term 2A may wish to return to the regular program for Third year and apply for the Industrial Experience Program (16 month internship placement) between Third and Fourth years.

### Electrical Engineering Co-operative Education Option

(General Information on Co-op programs can be found on p. 39.)

Students admitted to the Electrical Engineering program with high academic standing may be eligible for registration in the Co-operative Education Option. This option combines academic study with relevant work-term experience. Students enrolled in this option must complete the normal requirements for graduation, and also must successfully complete six work terms.

### The Work/Study Sequence

The structure of study and work terms is shown in the table below:

Calendar Year	Fall	Winter	Summer
1	study term 1A	study term 1B	work term 1A
2	study term 2A	study term 2B	work term 2A
3	work term 2B	study term 3A	study term 3B
4	work term 3A	work term 3B	work term 3C
5	study term 4A	study term 4B	

All study terms are identical in the co-op and regular options, except for study terms 3A and 3B, whose requirements are given below:

year Carleton Engineering program with a year's GPA of 9.0 or better. These applications will be considered on a case-by-case basis, particularly where advanced standing has been granted for courses completed at other institutions.

### Continuation in the Co-op Option

Once admitted to the Co-op option, a student must:

- maintain full-time status in each study term;
- complete all courses required in each study term with an average GPA of 8.0 or better;
- obtain a *Sat* grade in all work-term courses;
- maintain legal eligibility to work in Canada.

Students who fail to meet these requirements will be required to withdraw from the Co-op option.



Students who are required to withdraw from the co-op option will be eligible to continue in the regular B.Eng. program in Electrical Engineering provided they meet the minimum academic requirements for the Faculty of Engineering. (see p. 94).

### Graduation Requirements

Students who successfully complete all required co-op work-term courses in addition to all the requirements of the regular Electrical Engineering program will be eligible for graduation in the Co-operative Education Option. A Co-operative Education Option designation will appear on the final transcript and diploma.

### Work-Term Placement Fee

A placement fee will be charged for each co-op work-term. This fee will be used to defray the costs of administering the co-op option.

### Work-Term Placements

Arrangements for work-term placements will be made in the winter term for students in First and Second year of the co-op option, and in the summer term for students in Third year. Most placements are expected to be with companies in the greater Ottawa area. The Engineering and Science Co-op Office will provide a list of available positions, and will schedule interviews with employers. It is the final responsibility of the student to secure an available position through successful participation in the competitive interview process. Remuneration for work-term positions is a matter for negotiation between the student and the employer.

Students may make their own arrangements for work-term placements subject to the advanced approval of the Co-op Faculty Advisor. The planned work must have relevant engineering content.

## Engineering Common First Year

First Year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
65.111★	Chemistry for Engineering Students	-	3	-	3	6
69.104★	Calculus for Engineering Students	3	-	1	-	5
69.105★	Differential Equations and Infinite Series	-	3	-	1	5
69.114★	Linear Algebra for Engineering Students	-	3	-	1	5
75.104★	Introductory Physics for Engineering Students	-	3	-	3	6
91.100★	Orientation to Engineering	2	-	4	-	5
91.111★	Mechanics I	3	-	3	-	6
91.166★	Problem Solving and Computers	3	-	1	-	5
Elective★	Arts or Social Sciences	3	-	-	-	4
Elective★	Arts or Social Sciences	-	3	-	-	4
		14	16	9	10	51

Note (a) Students in Aerospace Stream C, Civil, Environmental and Computer Systems will take 23.100★ in First Year.

## Qualifying-University Year

Students who have not yet completed six OACs (including Calculus, Algebra and Geometry, Physics and Chemistry) or equivalent may apply to Qualifying-University year. The formal admission requirements are listed on p. 42, although alternative background preparations (e.g. courses from other Provinces, mature applicant status, etc.) may be presented for evaluation.

The course of studies consists of 5.0 full credits including mathematics, physics, chemistry and electives. The exact course of studies depends on background preparation and is to be determined in consultation with the Faculty Registral Services office at the time of registration.

### Accelerated Progress

Qualifying-University year (Engineering) students who pass all required courses in Qualifying-University year, including electives, with a B- or 7.0 average or better, may have their programs assessed for the purpose of reducing the number of courses required to graduate from the Bachelor of Engineering program. For example, approved humanities/social sciences electives taken as Qualifying-University year electives, which are at a First-year level or higher, may be used to fulfill program requirements in

the Bachelor of Engineering program. It is necessary for Qualifying-University year students to meet the promotion requirements of the Qualifying-University year, as well as the Accelerated Progress requirements, in order to be considered for Accelerated Progress.

### Academic Standing and Promotion

Students in Qualifying-University year are permitted to enrol in Summer-session courses, in a maximum of 2.0 credits or equivalent.

To achieve satisfactory academic standing the student must, at the end of August:

- (a) have received credit in Chemistry, Mathematics and Physics.
- (b) have a GPA of 3.4 or better in all courses completed in the year.

Students who achieve satisfactory academic standing are promoted to First-year Engineering. Students who fail to achieve satisfactory academic standing forfeit their undergraduate status in the Faculty of Engineering.

The Qualifying-University year is not considered as part of the Bachelor of Engineering program for the purpose of assessment of academic standing in the program.

## General Information

The study of Engineering is necessarily structured. Upper-year courses are built on the material studied in previous years. The program consists of a consecutive sequence of four years, each of which comprises the two terms of the Fall/Winter session. Regulations governing promotion are detailed below.

With few exceptions, courses in the Faculty of Engineering are offered only in the Fall/Winter session and only in the Day division. However, a significant portion of the Engineering program involves courses in the Faculties of Science, Arts and Social Sciences; many of these courses are offered in the Summer session and in the Evening division of the Fall/Winter session.

It should be noted that in all courses with computer programming assignments students usually find it necessary to be on campus at other than scheduled periods to make use of computing facilities.

For administrative matters regarding regulations and records, students are encouraged to seek advice from the Faculty Registrarial Services office.

### Course Load

The course requirements for each year of the program are tabulated beginning on p. 92 along with the course weight and hours for each course. Where the fraction  $\frac{3}{2}$  appears in the laboratory and problem analysis column, it means a three-hour period is scheduled on alternate weeks; the fraction  $\frac{1}{2}$  refers to a one hour workshop on alternate weeks.

During the Fall/Winter session, the normal course load for a full-time student is all of the courses for the program year in which the student is registered. The normal course load for Fourth-year students is the lesser of the courses of the program year or the number of courses required to satisfy graduation requirements. In order to enrol in a course, a student must have satisfied the prerequisites for that course or have permission of the department offering the course. Any student who is enrolled in a course but who has not satisfied the prerequisites for that course is required to obtain approval or may be required to withdraw from the course.

During the Summer session, the maximum course load is 2.0 credits.

### Elective Courses

The program course requirements tabulated beginning on p. 92 include arts or social sciences electives. Electives are selected from one or more of the categories listed below. A free elective can be chosen from any of the three categories. Where an elective course is shown in the tables with lectures two hours a week and laboratory/problem analysis three hours alternate weeks, the requirement is equally satisfied by a course having three hour lectures a week and no laboratory/problem analysis.

**1. Engineering Electives:** All undergraduate courses bearing the departmental numbers of the Faculty of Engineering (i.e. 81, 82, 86, 87, 88, 94, 97) are approved Engineering electives. Graduate courses bearing those numbers may be taken as electives with the approval of the chair of the department offering the course.

**2. Arts or Social Sciences Electives:** Courses in this classification must be chosen from among those listed as approved in the booklet, *Engineering Program Guide*, available from the Faculty Registrarial Services office.

### Student Responsibility

The student is responsible for knowing the regulations of the Faculty of Engineering and for complying with them. Any exceptions to the regulations must be approved, in writing, by the Faculty of Engineering Committee on Admission and Studies.

## Grading System

Standing in courses will be shown by alphabetical grades. (See 2p. 48).

Each course is assigned a course weight, shown on the charts beginning on p. 48. The weighted grade points achieved in a course are the product of the course weight and the grade points for that course. The cumulative weighted GPA is the sum of weighted grade points divided by the sum of course weights, for all courses for which the student has received a grade in the program of studies.

Where regulations refer to 1.0 credit, it is understood that two 0.5 credits are in all respects equivalent to 1.0 credit. Any course in the Engineering program with a weight of seven or greater is 1.0 credit; any course with a weight of six or less is a 0.5 credit.

Notations to represent special circumstances are as follows:

#### *Aeg*

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Engineering Faculty Committee on Admission and Studies only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

#### *F*

Failure; no academic credit.

#### *FWS*

Failure, but with supplemental privileges. No academic credit. This grade can only be given to Engineering courses at the 400-level.

#### *Wdn*

Withdrawn in good standing; no academic credit.

#### *Abs*

Absent from formally scheduled final, special final and supplemental examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.

#### *Def*

Indicates deferral of final grade has been approved by the Engineering Committee on Admission and Studies (see deferred Final Examinations p. 49).

#### *Sat*

Satisfactory.

#### *Uns*

Unsatisfactory.

## Grade-Raising Examinations

The Faculty of Engineering does not recognize grade-raising examinations. Students enrolled in the Bachelor of Engineering degree program may not take grade-raising examinations in any course that forms part of their program.

## Supplemental Examinations

In the Faculty of Engineering, supplemental examinations are offered only in Engineering courses at the 400-level. Supplemental examinations in Fall and Winter term courses at the 400-level are scheduled by the Registrarial Services office for the Faculty of Engineering.



A pass in a supplemental examination is given a grade of *D-*, which has a grade point value of 1. A failure in a supplemental examination retains the *F* grade.

## Summer Session

Students are permitted to enrol in a maximum of 2.0 credits in the Summer session. All Engineering, Mathematics and Science courses taken in the Summer session may be used to complete program requirements. Such courses count towards both continuation and program completion, and are reflected in the year's credit count, the year's weighted GPA, and in the cumulative weighted GPA.

The maximum number of Arts or Social Sciences electives that can be counted towards continuation is 1.0 credit in an academic year. Excess Arts or Social Sciences electives, taken during a Summer session or the previous Fall/Winter session, may be used to fulfil future program requirements. These courses will not affect the continuation decision for either the current year or for any future year but will count towards degree program completion, and will be reflected only in the cumulative weighted GPA.

## Academic Standing and Continuation

Academic standing for the academic year is determined, for all students, at the beginning of September. Standing is based on grades achieved during the previous 12-month period. This includes all earned grades for the Fall/Winter session, supplemental examination results in Fall/Winter session courses, and results in Summer session courses.

A year of study, as used in the Faculty of Engineering, refers to the academic year from September 1 to August 31 of the following year, and not to the program year defined in the previous section of these regulations. A year's weighted GPA is based on all courses (including a maximum of 1.0 credit of Arts or Social Sciences elective) taken during one academic year; calculation of the cumulative weighted GPA is based on the courses from all academic years in which the student has been registered in the B.Eng. program. The most recent grade obtained in each course will be used to compute the cumulative weighted GPA.

### Satisfactory Academic Standing

In order to meet the minimum requirements for satisfactory academic standing all students must:

1. meet the weighted GPA for the year of study just completed as listed below:
2. meet the cumulative weighted GPA for all courses taken as part of the B.Eng. program as listed below:

	Year's GPA	Cumulative GPA
after one year of study	3.0	3.0
after two years of study	3.2	3.2
after three or more years of study	3.4	3.4

3. not receive a grade of *F* or *ABS* in the year of study just completed in excess of the allowable number listed below:

Number of Credits Taken	Maximum Number of Credits Graded <i>F</i> or <i>Abs</i>
0.5 - 1.0	0
1.5 - 2.5	0.5
3.0 - 4.0	1.0
4.5 - 5.5	1.5
6.0 or more	2.0

### Continuation

Students who achieve satisfactory academic standing may continue in their program.

## Failure

Students who fail to achieve satisfactory academic standing fail the current year of study.

## Academic Probation

Students who have failed their year of study and have never been on academic probation may continue on academic probation.

Students who are placed on academic probation must repeat courses in which grades lower than *C-* were received in the failed year.

In order to clear probation, a student must obtain a year's weighted GPA of 4.0 or better in a minimum of 3.0 credits and must not receive a grade of *F* or *ABS* in the year of study just completed in excess of the allowable number listed below:

Number of Credits Taken	Maximum Number of Full Credits Graded <i>F</i> or <i>Abs</i>
3.0 - 4.5	0.5
5.0 or more	1.0

## Ineligibility to Return

Students who fail an academic year on a second occasion are ineligible to return to the Faculty of Engineering.

Students who fail to clear probation are ineligible to return to the Faculty of Engineering.

## Graduation

In order to fulfil the minimum graduation requirements for the degree of Bachelor of Engineering, a candidate must:

1. have completed the requirements of the First through Fourth years, inclusive, with a cumulative GPA of 3.4 or better.
2. have achieved satisfactory academic standing in the final year of study.
3. be recommended for graduation by the Faculty of Engineering.

Students must also fulfil all University graduation requirements. (See p. 49.)

## Degrees with Distinction

Upon recommendation of the Faculty of Engineering, the notation "with High Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To be considered for recommendation, the candidate is expected to obtain a weighted GPA of at least 10.0 in the course requirements of the Fourth year of that student's Program Option; in addition, the student must present a weighted GPA of at least 8.0 in the course requirements of the First to Fourth years, inclusive. Any candidate with a failure, supplemental examination, repetition or replacement course will not normally be considered for a degree "with High Distinction."

Upon recommendation of the Faculty of Engineering, the notation "with Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To be considered for this recommendation, the candidate is expected to obtain a weighted GPA of 9.0 or better in the course requirements of the Fourth year of that student's Program Option; in addition, the student must present a weighted GPA of 7.0 or better in the course requirements of the First to Fourth years, inclusive. Any candi-



date with a failure, supplemental examination, repetition or replacement course in more than a total of 2.0 credits will not normally be considered for a degree "with Distinction."

**Note:** In addition to these numerical requirements, students must also fulfil the detailed requirements listed under the "Graduation" section, see above.

## Graduate Programs

Programs of study are offered by the Faculty of Engineering leading to the degrees of Master of Engineering and Doctor of Philosophy in Aerospace, Civil, Electrical and Mechanical Engineering; to the degree of Master of Engineering in Materials Engineering, and, in co-operation with the Faculty of Science, to the degree of Master of Science in Information and Systems Science. In co-operation with the School of Computer Science, the Department of Mathematics and Statistics, and the University of Ottawa, the Faculty offers a joint program leading to the degree of Master of Computer Science. Joint programs in Aerospace, Civil, Electrical and Mechanical Engineering at both Masters and Ph.D. levels are offered in conjunction with the University of Ottawa. For further details, contact the Graduate Secretary, Faculty of Engineering, or refer to the *Faculty of Graduate Studies and Research Calendar*.

## Academic and Professional Clubs and Societies

The following clubs and societies operating on the campus serve to broaden and enrich the curriculum and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Engineering.

*The Canadian Society for Mechanical Engineering* — Student Section sponsors field trips, films and speakers on industrial and other aspects of mechanical engineering.

*The American Society for Materials* for students interested in Materials Engineering; students are invited to the monthly meetings of the Ottawa Valley chapter of ASM. Faculty Adviser, Dr. M. J. Bibby.

*The Canadian Aeronautics and Space Institute* meets monthly to provide a forum for discussion and dissemination of information on topics relating to aeronautics and space activities.

*The Canadian Society for Civil Engineering* promotes technical activities related to all areas of civil engineering, such as building design and construction, geotechnical engineering and transportation. The activities of this group are designed to enhance and broaden the student's appreciation of the profession. To this effect, speakers are brought to the Department of Civil Engineering to give seminars on current topics and visits are organized to construction sites and other facilities where civil engineering has played an important role. Faculty Adviser: Dr. S.J. Kennedy.

*The Carleton Student Engineering Society (C.S.E.S.)* is open to all members of the University who are enrolled in Engineering courses. Through its academic and social activities, C.S.E.S. acts as a liaison between the students and the governing bodies of the University and promotes professional interest, high standards and a spirit of mutual assistance in the study of engineering.

*The Institute of Transportation Engineers (I.T.E.)* is an international organization of professional transportation engineers. The I.T.E. is organized into Districts, of which Canada is one, and into Sections, of which Ottawa is one. For students in transportation, there are Student Chapters, one of which is located on campus. The Chapter is closely associated with the local Section. Joint meetings are held once a month in Ottawa. The meetings have both a technical and social content. Membership in the Student Chapter is an excellent way of becoming part of the profession of transportation engineering. Students enrolled in the transportation program are eligible to join. Faculty Adviser: Dr. John P. Braaksmä.

The Student Branch of the *Institute of Electrical and Electronics Engineers (I.E.E.E.)* organizes a series of events of both professional and general interest. Among these activities are an annual "Computer Fair", an employment workshop for upper-year students, an annual "papers" night and student-faculty get-togethers. Faculty Adviser: Dr. Calvin Plett.

## Common Core Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Engineering 91.100★

### Orientation to Engineering

Introduces the engineering profession; major disciplines, regulation and contemporary issues in engineering; importance of writing in engineering. Drawing instruments and elementary drawing techniques such as pictorial sketching and orthographic projection; section views; CAD systems, introduction to the fundamentals of manufacturing methods.

Lectures and tutorials two hours a week, laboratories four hours a week.

Engineering 91.111★

### Mechanics I

Introduction to mechanics. Scalars and vectors. Concurrent forces: resultant and components. Statics of particles. Moments and couples. Force system resultants. Rigid body equilibrium. Frames and machines. Internal forces. Kinematics and kinetics of particles. Conservation theorems: work-energy; impulse-momentum. Centroids and centres of gravity.

Lectures three hours a week, tutorials and problem analysis three hours a week.

Engineering 91.166★

### Problem Solving and Computers

Introduction to engineering problem solving. Defining and modeling problems, designing algorithmic solutions, converting algorithms to C++ programs, testing, debugging. Program style, documentation, reliability. Numeric methods: representation of data, rounding and truncation errors, root finding, curve fitting.

Lectures three hours a week, laboratory one hour a week.

Engineering 91.266★

### Numerical Methods

Numerical algorithms and tools for engineering and problem solving. Sources of error and error propagation, solution of systems of linear equations, curve fitting, polynomial interpolation and splines, numerical differentiation and integration, root finding, solution of differential equations. Software tools. Precludes additional credit for Engineering 94.266★.

Prerequisites: Mathematics 69.105★ and Engineering 91.166★.

Lectures three hours a week, laboratory one hour a week.

Engineering 91.380★

### Engineering Economics

Introduction to engineering economics; cash flow calculations; methods of comparison of alternatives; structural analysis; replacement analysis; public projects; depreciation and income tax; effects of inflation; sensitivity analysis; break-even analysis; decision making under risk and uncertainty.

Prerequisite: Third-year registration.

Lectures three hours a week.

Engineering 91.400

### Industrial Experience Report

Students participating in the Industrial Experience Program must submit a formal report upon returning. This report should describe the organization in which the internship took place, the role of the student, the experience obtained and an appraisal of the effectiveness of the training received. Engineering 91.400 is a course with a 0.0 credit value and carries no weight. Grades for the course are SAT (satisfactory) or UNS (unsatisfactory). This course is extra to the degree requirements.



## Work Term Report Courses

Co-op students must be registered as full-time students in the Bachelor of Engineering program in all academic terms of the co-op option. While on work terms students must be registered in one of the following report courses:

### Civil and Environmental Engineering and Mechanical and Aerospace Engineering

- 81/82/86.191 ★ **Work Term 1**
- 81/82/86.292 ★ **Work Term 2**
- 81/82/86.393 ★ **Work Term 3**
- 81/82/86.394 ★ **Work Term 4**
- 81/82/86.395 ★ **Work Term 5**
- 81/82/86.396 ★ **Work Term 6**

### Computer Systems Engineering and Electrical Engineering

- 94/97.191 ★ **Work Term 1A**
- 94/97.291 ★ **Work Term 2A**
- 94/97.292 ★ **Work Term 2B**
- 94/97.391 ★ **Work Term 3A**
- 94/97.392 ★ **Work Term 3B**
- 94/97.393 ★ **Work Term 3C**

At the completion of each work term, a report on activities undertaken must be submitted to the Co-op Faculty Advisor. The employer will submit an evaluation of the student's performance during the work term. A work term course grade of *Sat* or *Uns* will be assigned by the Co-op Faculty Advisor on the basis of the work term report and the employer's evaluation.

## Aerospace Engineering Program

Aerospace Engineering covers a wide variety of applications ranging from aircraft aerodynamics, structures and propulsion to the complete design and systems integration of air and space vehicles. The main disciplines relating to airframes, propulsion and space platforms are solid mechanics and materials, fluid mechanics and thermo-sciences; the topic areas are basically the same as for Mechanical Engineering, with a somewhat different emphasis. Electronic systems are a vital, sometimes dominant, element in modern aircraft and spacecraft for navigation, guidance and control. In addition, electronic systems for remote sensing, communication, etc., normally comprise the entire payload of a spacecraft. Electronics and Systems engineering are key disciplines in such situations, dynamics and the thermo-sciences are important in designing the systems for the environment in which they must function.

Three streams are available in the Aerospace Engineering degree program (A) Aerodynamics, Propulsion and Vehicle Performance; (B) Aerospace Structures, Systems and Vehicle Design; (C) Aerospace Electronics and Systems. The (A) and (B) streams are identical to the Mechanical program for the first two years while the (C) stream differs only slightly in Second year.

The Third year of all streams differs substantially from the Mechanical Engineering program while the Fourth year is almost entirely different. Stream (C) incorporates numerous electronics and systems engineering courses. All aerospace engineering students will

participate as design team members in a single major project, typically involving the design of an aerospace vehicle in an environment much like that of an engineering design office.

### Co-operative Industrial Experience Program Option

The Department of Mechanical and Aerospace Engineering offers a Co-operative Industrial Experience Program Option for eligible students. Upon satisfactory completion of the option, students will receive the designation B. Eng. (Co-operative Industrial Experience Option) on their transcripts. For details, refer to Co-operative Education Section on p. 89.

### Suggested Engineering Electives

Any course numbered Engineering 86/87/88.4xx for which the prerequisite material and other noted constraints are satisfied. Stream C may also use courses numbered 94/97.4xx.

### Spacecraft Design

Aspects of spacecraft design are covered in both the Aerospace Program (Streams A, B and C), and also in the Mechanical Program; therefore, both Aerospace and Mechanical students may follow their interests and accommodate this area of study.

Aerospace students can achieve this by choosing appropriate electives such as 87.481★, 88.451★, 88.453★, and the Aerospace Project, 87.497.

### Aerospace Stream A - Aerodynamics, Propulsion and Vehicle Performance

### Aerospace Stream B - Aerospace Structures, Systems and Vehicle Design

#### Second Year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.375★	Mathematical Methods I	-	4	-	-	5
86.201★	Engineering Graphics and Design	-	2	-	4	5
86.211★	Engineering Dynamics	3	-	3	-	6
86.222★	Mechanics of Solids I	3	-	3	-	6
86.230★	Fluid Mechanics I	-	3	-	3	6
86.240★	Thermodynamics and Heat Transfer	3	-	3	-	6
86.270★	Introduction to Engineering Materials	-	3	-	3	6
91.266★	Numerical Methods	-	3	-	1	4
23.100★	Communication Skills for Engineering Students	-	-	3	-	4
		13	15	12	11	51

**Aerospace Stream C - Aerospace Electronics and Systems  
Second Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.375★	Mathematical Methods I	-	4	-	-	5
86.211★	Engineering Dynamics	3	-	3	-	6
86.222★	Mechanics of Solids I	3	-	3	-	6
86.230★	Fluid Mechanics I	-	3	-	3	6
97.251★	Circuits and Signals	3	-	3	-	6
91.266★	Numerical Methods	-	3	-	1	4
94.202★	Program Design and Construction	3	-	2	-	5
97.267★	Switching Circuits	-	3	-	3/2	5
97.257★	Electronics I	-	3	-	3	6
		16	16	11	8.5	54

**Aerospace Stream A - Aerodynamics, Propulsion and Vehicle Performance  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
86.304★	Dynamics of Machinery	3	-	1	-	5
86.322★	Mechanics of Solids II	3	-	3	-	6
86.330★	Fluid Mechanics II	3	-	3	-	6
86.340★	Applied Thermodynamics	-	3	-	1	5
86.491★	Mechanical and Aerospace Engineering Lab	-	1	-	5	5
87.302★	Aerospace Design and Practice	-	3	-	3	6
87.370★	Aerospace Materials & Manufacturing Methods	-	3	-	1	5
94.360★	Systems and Simulation	3	-	3	-	6
97.365★	Electrical Engineering	3	-	3/2	-	5
		15	14	11.5	10	54

**Aerospace Stream B - Aerospace Structures, Systems and Vehicle Design  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
86.304★	Dynamics of Machinery	3	-	1	-	5
86.322★	Mechanics of Solids II	3	-	3	-	6
86.330★	Fluid Mechanics II	3	-	3	-	6
86.491★	Mechanical and Aerospace Engineering Lab	-	1	-	5	5
87.302★	Aerospace Design and Practice	-	3	-	3	6
87.311★	Lightweight Structures	-	3	-	1	5
87.370★	Aerospace Materials & Manufacturing Methods	-	3	-	1	5
94.360★	Systems and Simulation	3	-	3	-	6
97.365★	Electrical Engineering	3	-	3/2	-	5
		15	14	11.5	10	54



**Aerospace Stream C - Aerospace Electronics and Systems  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
86.240★	Thermodynamics and Heat Transfer	-	3	-	3	6
86.322★	Mechanics of Solids II	3	-	3	-	6
87.302★	Aerospace Design and Practice	-	3	-	3	6
94.351★	Communication Theory	-	3	-	3/2	5
94.360★	Systems and Simulation	3	-	3	-	6
97.350★	Digital Electronics	2	-	3	-	5
97.359★	Electronics II	3	-	3	-	6
97.398★	Physical Electronics	3	-	-	-	4
97.399★	Electromagnetic Waves	-	2	-	3	5
		14	15	12	11	54

**Aerospace Stream A - Aerodynamics, Propulsion and Vehicle Performance  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
86.352★	Feedback Control Systems	3	-	1	-	5
86.495★	Professional Practice	-	3	-	-	4
87.403★	Aerospace Systems Design	3	-	3	-	6
87.432★	Applied Aerodynamics and Heat Transfer	3	-	-	-	4
87.436★	Aircraft & Spacecraft Performance & Dynamics	3	-	-	-	4
87.438★	Aircraft Stability and Control	-	3	-	-	4
87.497	Aerospace Engineering Project	-	-	8	8	9
91.380★	Engineering Economics	-	3	-	-	4
Elective★	Engineering (Note a)	3	-	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
		15	15	12	8	52

**Note: (a)** Selected from available Engineering 86.4xx★, 87.4xx★ or 88.4xx★ courses

**Aerospace Stream B - Aerospace Structures, Systems and Vehicle Design  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
86.352★	Feedback Control Systems	3	-	1	-	5
86.412★	Engineering Materials: Strength and Fracture	3	-	-	-	4
86.495★	Professional Practice	-	3	-	-	4
87.403★	Aerospace Systems Design	3	-	3	-	6
87.462★	Introductory Aeroelasticity	-	3	-	-	4
87.468★	Composite Materials	3	-	-	-	4
87.497	Aerospace Engineering Project	-	-	8	8	9
91.380★	Engineering Economics	-	3	-	-	4
Elective★	Engineering (Note a)	3	-	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
		15	15	12	8	52

**Note (a)** Selected from available Engineering 86.4xx, 87.4xx or 88.4xx courses.

**Aerospace Stream C - Aerospace Electronics and Systems  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
86.495★	Professional Practice	-	3	-	-	4
87.403★	Aerospace Systems Design	3	-	3	-	6
87.497	Aerospace Engineering Project	-	-	8	8	9
91.380★	Engineering Economics	-	3	-	-	4
Elective★	Arts or Social Sciences	-	3	-	-	4
86.352★	Feedback Control Systems	3	-	1	-	5
Three of:						
87.481★	Spacecraft Design	3	-	-	-	4
97.455★	Telecommunication Circuits	3	-	-	-	4
94.460★	Digital Communications	3	-	-	-	4
97.453★	Radio Frequency Lines and Antennas	3	-	-	-	4
Two of:						
94.445★	Introduction to Digital Signal Processing	-	3	-	-	4
97.452★	Microwave Circuits	-	3	-	-	4
97.459★	Communication Links	-	3	-	-	4
97.460★	Radar and Navigation	-	3	-	-	4
97.476★	Digital Integrated Electronics	-	3	-	-	4
		15	15	12	8	52

### Civil Engineering Program

Civil engineers play a key role in the development and management of the infrastructure of a country. They are engaged in all aspects related to research, planning, construction and maintenance of bridges, buildings, dams, airports, power stations, highways, subways, transportation networks, harbours, water supply and waste water treatment facilities. Modern civil engineers are called upon to profess their expertise in analysis, computer applications, design and management skills; to plan and execute projects in areas such as energy resources development, engineering for cold climates, hazardous waste management, structural engineering, geotechnical engineering, transportation engineering, and environmental engineering, all of which are of national importance.

The program in Civil Engineering at Carleton University builds upon the common core program which provides a broad background education in engineering, science and mathematics. The Civil Engineering program consists of a set of interrelated courses in structural mechanics, structural engineering, geotechnical engineering and transportation engineering that emphasize the conceptualization, mathematical modelling, engineering design and solution of problems faced by today's civil engineer.

Many civil engineers also make their careers in practices that are managerial in nature and involve managerial decision making. The managerial aspects of civil engineering and engineering at large are expected to play an increasing role in the future training of engineers. In recognizing this potential the Department of Civil and Environmental Engineering has introduced the degree program in Civil Engineering with "Concentration in Management".

In this program, the Civil Engineering curriculum is complemented by courses in subjects such as management accounting, industrial engineering, operations research and organizational behaviour. Upon satisfactory completion of a prescribed set of courses the students enrolled in the subspecialty will receive the designation "Concentration in Management" on their transcripts.

The interdisciplinary aspects of the program are enhanced by the selection of elective courses in the arts and social sciences listed in the Engineering Program Guide, which is available from the Faculty Registrarial Services office.

#### Co-operative Industrial Experience Program Option

The Department of Civil and Environmental Engineering offers a Co-operative Industrial Experience option for eligible students. Upon satisfactory completion of the option, students will receive the designation B.Eng. (Co-operative Industrial Experience Option) on their transcript. For details, refer to Co-operative Education Section on p. 89.

#### Suggested Engineering Electives

81.303★, 82.420★, 82.421★, 82.422★, 82.431★, 82.432★, 82.433★, 82.437★, 82.438★, 82.440★, 82.443★, 82.450★

#### Additional Electives available for Management Concentration

82.428★, 82.429★, 82.447★, 42.254★, 42.211★, 42.312★, 42.360★, 42.415★, 42.435★, 42.467★



**Civil: General  
Second Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
67.244★	Engineering Geology	-	3	-	3	6
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.375★	Mathematical Methods I	-	4	-	-	5
69.257★	Introduction to Statistics	-	4	-	-	5
82.104★	Surveying (see Note a)	-	-	-	-	4 (Spring)
82.211★	Mechanics II	3	-	3	-	6
82.220★	Mechanics of Deformable Bodies	3	-	3	-	6
82.270★	Civil Engineering Materials	-	3	-	3	6
86.230★	Fluid Mechanics I	-	3	-	3	6
86.240★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.266★	Numerical Methods	3	-	1	-	4
		16	17	10	9	56 + 4 (Spring)

**Note: (a)** Students are encouraged to take Engineering 82.104★ (Surveying) in either the First or Second year of their Engineering program. Lectures and field work three weeks at the beginning of the Spring term.

**Civil: General  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
82.322★	Advanced Mechanics	-	3	-	3/2	5
82.323★	Structural Analysis I	3	-	3/2	-	5
82.324★	Introduction to Structural Design	3	-	3/2	-	5
82.325★	Design of Steel Components	-	3	-	3/2	5
82.326★	Design of Reinforced Concrete Components	-	3	-	3/2	5
82.328★	Geotechnical Mechanics	3	-	3/2	-	5
82.334★	Transportation Engineering and Planning	-	3	-	3/2	5
91.380★	Engineering Economics	3	-	-	-	4
97.365★	Electrical Engineering	3	-	3/2	-	5
Elective★	Arts or Social Sciences	-	3	-	-	4
		16	15	6	6	48

**Civil: General  
Fourth Year**

		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
82.428★	Geotechnical Engineering	3	-	3/2	-	5
82.429★	Highway Engineering	-	3	-	3/2	5
82.447★	Municipal Engineering	3	-	3/2	-	5
82.495★	Professional Practice	-	3	-	3/2	4
82.497	Engineering Project	-	-	8	8	9
Two of:						
82.420★	Matrix Analysis of Framed Structures	3	-	3/2	-	5
82.432★	Reinforced and Prestressed Concrete Design	3	-	3/2	-	5
82.433★	Urban Planning	3	-	3/2	-	5
82.437★	Municipal Hydraulics	3	-	3/2	-	5
82.440★	Construction/Project Management	3	-	3/2	-	5
82.443★	Masonry Design	3	-	3/2	-	5
Two of:						
81.303★	Water Resources Engineering	-	3	-	1	5
82.421★	Finite Element Methods in Structural Analysis	-	3	-	3/2	5
82.422★	Wood Engineering	-	3	-	3/2	5
82.431★	Foundation Engineering	-	3	-	3/2	5
82.438★	Behaviour and Design of Steel Structures	-	3	-	3/2	5
82.450★	Computer Methods in Civil Engineering	-	3	-	3/2	5
Elective★	Arts or Social Sciences	3	-	-	-	4
Elective★	Arts or Social Sciences	-	3	-	-	4
		15	15	14	12.5	56

**Concentration in Management**
**Civil: Concentration in Management  
Second Year**

		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
42.313★	Introduction to Organizational Theory	-	3	-	-	4
42.270★	Accounting Fundamentals	3	-	-	-	4
67.244★	Engineering Geology	-	3	-	3	6
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.257★	Introduction to Statistics	-	4	-	-	5
82.104★	Surveying (Note a)	-	-	-	-	4 (spring)
82.211★	Mechanics II	3	-	3	-	6
82.220★	Mechanics of Deformable Bodies	3	-	3	-	6
82.270★	Civil Engineering Materials	-	3	-	3	6
86.230★	Fluid Mechanics I	-	3	-	3	6
91.266★	Numerical Methods	3	-	1	-	5
		16	16	7	9	53 + 4 (Spring)

**Note: (a)** Students are encouraged to take Engineering 82.104★ (Surveying) in either the First or Second year of their Engineering program. Lectures and field work three weeks at the beginning of the Spring term.



**Civil: Concentration in Management  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
42.224★	Basic Marketing	-	3	-	-	4
82.322★	Advanced Mechanics	-	3	-	3/2	5
82.323★	Structural Analysis I	3	-	3/2	-	5
82.324★	Introduction to Structural Design	3	-	3/2	-	5
82.325★	Design of Structural Steel Components	-	3	-	3/2	5
82.326★	Design of Reinforced Concrete Components	-	3	-	3/2	5
82.328★	Geotechnical Mechanics	3	-	3/2	-	5
82.334★	Transportation Engineering and Planning	-	3	-	3/2	5
91.380★	Engineering Economics	3	-	-	-	4
97.365★	Electrical Engineering	3	-	3/2	-	5
		15	15	6	6	48

**Civil: Concentration in Management  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
82.440★	Construction/Project Management	3	-	-	-	5
82.495★	Professional Practice	-	3	-	-	4
82.497	Engineering Project	-	-	8	8	9
94.320★	Industrial Engineering	3	-	-	-	4
Two of:						
82.420★	Matrix Analysis of Framed Structures	3	-	3/2	-	4
82.428★	Geotechnical Engineering	3	-	3/2	-	5
82.432★	Reinforced and Prestressed Concrete Design	3	-	3/2	-	5
82.433★	Urban Planning	3	-	3/2	-	5
82.437★	Municipal Hydraulics	3	-	3/2	-	5
82.443★	Masonry Design	3	-	3/2	-	5
82.447★	Municipal Design	3	-	3/2	-	5
One of:						
42.211★	Introduction to Organizational Behaviour	-	3	-	-	4
42.254★	Essentials to Business Finance	-	3	-	-	4
Two of:						
81.303★	Water Resources Engineering	-	3	-	1	5
82.421★	Finite Element Methods in Structural Analysis	-	3	-	3/2	5
82.422★	Wood Engineering	-	3	-	3/2	5
82.429★	Highway Engineering	-	3	-	3/2	5
82.431★	Foundation Engineering	-	3	-	3/2	5
82.438★	Behaviour and Design of Steel Structures	-	3	-	3/2	5
82.450★	Computer Methods in Civil Engineering	-	3	-	3/2	5
Two of:						
42.312★	Human Resources Management	-	3	-	-	4
42.360★	Small Business Management	-	3	-	-	4
42.415★	Organizational Development and Change	-	3	-	-	4
42.435★	Operations Research II	-	3	-	-	4
42.467★	Management of Technology and Innovation	-	3	-	-	4
		12	18	12.5	11.0	54

## Communications Engineering Program

Communications Engineering is a new program, growing out of Computer Systems Engineering and Electrical Engineering, that is concerned with the reliable, effective, and economical generation, distribution and reception of information. Communications Engineers will be responsible for the planning, analysis and design, implementation, operation, testing, maintenance and management of communication systems and distributed information systems. Such engineers will play an essential role in the creation, deployment and operation of the information systems that modern society depends on. They will be employed as the architects and implementers of the communications facilities that will meet the information needs of all manner of commercial, institutional and industrial users; and be active in the development of new generations of integrated voice, data and image telecommunication systems and universal personal communications.

The Communications Engineering degree provides an undergraduate engineering education that has a broad foundation in basic mathematics, physical science and the engineering sciences and technology. Students will receive a comprehensive education ranging from communications theory and practice to distributed information systems, including radio links, switching and networks

and regulatory and social issues, with a strong background in real-time computer systems and software engineering.

Graduates of the new program will be knowledgeable concerning common carrier practices, network and switching theory, and standards. They will have had the opportunity to study wire, radio and optical transmission systems, as well as the design and synthesis of voice, data and image networks. They will study data network protocols, traffic analysis and transmission line theory in a single program along with broadcasting and television and advanced applications of integrated electronics and digital signal processing.

The First year of the curriculum is the standard core program of the Carleton University engineering program. In Second year students take the foundation courses in Computer Systems Engineering and Electrical Engineering, as well as an introductory course in Communication Theory. In Third year, students take courses in Electronics, Digital Signal Processing, Linear Systems Theory, Electromagnetic Theory, Probability, Object-Oriented Programming, Computer Communications, Communications Theory and Communications Software. In Fourth Year, students enhance their coverage of communications with courses in Digital Communications, Distributed Network Processing, Telecommunications Engineering, and Communication Systems Analysis and Design.

### Communications Engineering Second year

		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
94.201★	Foundations of Computer Systems	3	-	2	-	5
94.202★	Program Design and Construction	3	-	2	-	5
97.251★	Circuits and Signals	3	-	3	-	6
23.100★	Communication Skills for Engineering Students	-	-	3	-	4
69.375★	Mathematical Methods I	-	4	-	-	5
94.203★	Introduction to Real-Time Systems	-	3	-	2	5
94.250★	Introduction to Communication Theory	-	3	-	3/2	5
97.257★	Electronics I	-	3	-	3	6
97.267★	Switching Circuits	-	3	-	3/2	5
		13	16	12	11	51

### Communications Engineering Third year

		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.265★	Probability Models	4	-	-	-	5
94.360★	Systems and Simulation	3	-	3	-	6
94.352★	Introduction to Communications Software	3	-	3	-	6
97.350★	Digital Electronics	2	-	3	-	5
97.315★	Basic EM and Power Engineering	3	-	3/2	-	5
94.353★	Communication Theory II	-	3	-	3/2	5
94.445★	Introduction to Digital Signal Processing	-	3	-	3/2	5
94.462★	Introduction to Computer Communications	-	3	-	3/2	5
94/97.395★	Professional Practice	-	3	-	-	4
94.204★	Object Oriented Programming Laboratory	-	2	-	3	5
		15	14	10.5	10.5	51



**Communications Engineering  
Fourth Year**

Term		Lectures and Tutorial		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
94.499	Engineering Project	-	-	8	8	9
94.464★	Digital Communications	3	-	3/2	-	5
94.454★	Distributed Network Processing	3	-	-	-	4
91.380★	Engineering Economics	3	-	-	-	4
Elective★	Engineering Elective (Note a)	3	-	3/2	-	5
94.470★	Telecommunications Engineering	-	3	-	3/2	5
94.471★	Communication Systems Analysis and Design	-	2	-	4	5
Elective★	Engineering Elective (Note a)	-	3	-	3/2	5
Elective★	Engineering Elective (Note a)	-	3	-	3/2	5
Elective	Arts or Social Sciences	3	3	-	-	7
		15	14	11	16.5	54

**Note (a)** It is required that students select at least 1.0 credit from the following list of courses: 94.457★ Architecture of Computer Systems, 94.405★ Discrete Simulation and Its Applications, 97.399★ Electromagnetic Waves, 97.459★ Communication Links, 97.461★ Microprocessor Systems, 97.476★ Digital Integrated Electronics, 97.478★ Advanced Digital Integrated Circuit Design. One of these, or any 94.4xx★ or 97.4xx★ course may be selected to fulfill the other 0.5 credit requirement.

### Computer Systems Engineering Program

The study of Computer Systems Engineering centres around the design, analysis and implementation of engineering systems that have computers as components. A Computer Systems Engineer is one who can combine advanced software and hardware to build such systems, subject to economic and performance constraints. The Computer Systems Engineering program aims to provide students with an excellent foundation in the principles, methods, computer tools and elements of professional practice for this purpose.

At Carleton University, students following the program in Computer Systems Engineering will take courses from the Departments of Electronics and Systems and Computer Engineering. Information on courses offered in the program may be obtained in the calendar sections for those two departments.

Students in the final three years in the Computer Systems Engineering program at Carleton University build upon the broad background in engineering developed in the common core program of the first year. While the Third and Fourth years have some commonality with the Electrical Engineering program, Computer Sys-

tems engineers concentrate primarily on digital logic, computer systems organization and design, and communications systems and software engineering. In addition, students may take a number of electives either to broaden their background or to provide further specialized knowledge in the areas of telecommunications, systems engineering, and microelectronics.

#### *Suggested Engineering Electives*

88.453★, 91.266★

Any Third- or Fourth-year course numbered 94.xxx★ or 97.xxx★ for which the prerequisite and other noted constraints are satisfied.

#### Computer Systems Co-operative Education Option

The Department of Systems and Computer Engineering offers a Co-operative Education Option for eligible students. Upon satisfactory completion of the option, students will receive the designation B.Eng. (Co-operative Education Option) on their transcripts. For details, refer to the Co-operative Education section on p. 90.

#### Computer Systems Second year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.375★	Mathematical Methods I	-	4	-	-	5
86.211★	Engineering Dynamics	3	-	3	-	6
94.201★	Foundations of Computer Systems	3	-	2	-	5
94.202★	Program Design and Construction	3	-	2	-	5
94.203★	Introduction to Real-Time Systems	-	3	-	2	5
94.204★	Object Oriented Programming Laboratory	-	2	-	3	5
97.251★	Circuits and Signals	3	-	3	-	6
97.257★	Electronics I	-	3	-	3	6
97.267★	Switching Circuits	-	3	-	3/2	5
		16	15	10	8.5	54

**Computer Systems  
Third year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
91.380★	Engineering Economics	3	-	-	-	4
94.301★	Operating Systems and Data Bases	3	-	-	-	4
94.310★	Systems Analysis	3	-	-	-	4
94.333★	Real-Time Concurrent Systems	-	2	-	3	5
94.351★	Communication Theory	-	3	-	3/2	5
94.360★	Systems and Simulation	3	-	3	-	6
94.361★	Microprocessor Systems	-	3	-	3/2	5
94.395★	Professional Practice	-	3	-	-	4
97.350★	Digital Electronics	2	-	3	-	5
		14	15	6	6	47

**Computer Systems  
Fourth year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
94.457★	Architecture of Computer Systems	-	3	-	-	4
94.462★	Introduction to Computer Communications	3	-	3/2	-	5
94.480★	Software Engineering	3	-	3/2	-	5
94.485★	Computer Systems Design Laboratory	-	2	-	4	5
94.498	Engineering Project (Note a)	-	-	8	8	9
97.475★	Electronic Materials, Devices and Media	3	-	-	-	4
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Engineering (Note b)	3	-	3/2	-	5
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Arts or Social Sciences	3	3	-	-	7
		15	14	14	15	54

**Note: (a)** See course description to determine appropriate course number.

**(b)** Selected from the list of Suggested Engineering electives

## Electrical Engineering Program

Electrical engineers are engaged in research, design, development and production associated with a wide variety of electrical devices and systems. Examples include electronic circuit design and fabrication, and the design and application of communications systems, computers, and power systems. Opportunities exist for electrical engineers in industry, government and education.

At Carleton University, students following the program in Electrical Engineering will take courses from the Departments of Electronics and Systems and Computer Engineering. Information on courses offered in the program may be obtained in the calendar sections for those two departments.

The First year of the Engineering program provides a broad common background of technical fundamentals. The next three years of Electrical Engineering concentrate primarily on electronics, telecommunications and computers. The wide selection of Fourth year electives tends to reflect the technology-driven industry in the Ottawa area. Integrated circuit design and fabrication,

telecommunications systems, and computer software are specializations which are particularly well covered at Carleton. Students may choose elective courses from the list of specializations given below.

### Suggested Electives

87.430★, 88.443★, 88.453★, 88.474★, 88.475★, 94.310★, 94.320★, 94.401★, 94.405★, 94.415★, 94.445★, 94.455★, 94.457★, 94.460★, 94.462★, 97.452★, 97.455★, 97.456★, 97.460★, 97.469★, 97.470★, 97.476★, 97.478★, 97.496★

### Electrical Co-operative Education Option

The Department of Electronics offers a Co-operative Education Option for eligible students. Upon satisfactory completion of the option, students will receive the designation B.Eng. (Co-operative Education Option) on their transcripts. For details, refer to the Co-operative Education section on p. 91.



**Electrical Engineering  
Second Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
91.266★	Numerical Methods	3	-	1	-	5
97.251★	Circuits and Signals	3	-	3	-	6
94.202★	Program Design and Construction	3	-	2	-	5
69.375★	Mathematical Methods I	-	4	-	-	5
94.204★	Object Oriented Programming Laboratory	-	2	-	3	5
97.257★	Electronics I	-	3	-	3	6
97.267★	Switching Circuits	-	3	-	3/2	5
Elective★	Arts or Social Sciences	3	-	-	-	4
23.100★	Communications Skills for Engineering Students	-	3	-	-	4
		16	15	6	7.5	50

**Electrical  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
94.360★	Systems & Simulation	3	-	3	-	6
97.359★	Electronics II	3	-	3	-	6
97.350★	Digital Electronics	2	-	3	-	5
97.398★	Physical Electronics	3	-	3/2	-	5
97.315★	Basic EM & Power Engineering	3	-	3/2	-	5
69.352★	Probability & Statistics	-	4	-	-	5
94.303★	Real-Time Computing Systems	-	3	-	2	5
94.351★	Communication Theory	-	3	-	3/2	5
97.395★	Professional Practice	-	3	-	-	4
97.399★	Electromagnetic Waves	-	-	3	3/2	5
		14	13	15	5	51

**Electrical  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
97.461★	Microprocessor Systems	3	-	3/2	-	5
94/97.497	Engineering Project (Note a)	-	-	8	8	9
91.380★	Engineering Economics	-	3	-	-	4
Elective★	Engineering (Note b)	3	-	3/2	-	5
Elective★	Engineering (Note b)	3	-	3/2	-	5
Elective★	Engineering (Note b)	3	-	3/2	-	5
Elective★	Engineering (Note b)	-	3	-	3/2	5
Elective★	Engineering (Note b)	-	3	-	3/2	5
Elective★	Engineering (Note b)	-	3	-	3/2	5
Elective★	Science or Engineering (Note c)	-	3	-	3/2	5
Elective★	Arts or Social Sciences	3	-	-	-	4
		15	15	14	14	57 (Note d)

**Note:** (a) Register in 97.497 if your advisor is in Electronics. Register in 94.497 if your advisor is in Systems and Computer Engineering.

(b) Selected from 87.430★, 88.443★, 88.453★, 88.474★, 88.475★, 94.204★, 94.310★, 94.320★, 94.4xx★, 97.4xx★.

(c) Selected from 8x.Yxx★ (Y≥2) or "Acceptable for Scientific Credit" courses from the list "Classification of Electives for Engineering Students" in the "Engineering Program Guide" available from the Registrarial Services office for Engineering; or as per note (b)

(d) Elective course weights vary between 4 and 5 depending on the course laboratory content.

*Suggested Elective Courses for Specialization in Computers*

97.478★, 97.476★, 94.401★, 94.457★, Elective★

*Suggested Elective Courses for Specialization in Communication Electronics*

97.455★, 97.453★, 97.476★, 94.445★, 97.477★

*Suggested Elective Courses for Specialization in Telecommunication Systems*

94.462★, 94.460★, 97.476★, 94.445★, 97.459★

**Environmental Engineering Program**

Environmental Engineering focuses on management and protection of the environment and on the development of engineered solutions which minimize the threat to human health. Environmental engineers play a major role in the development of technically sound and economically feasible solutions to air and water pollution, noise pollution, and hazardous and toxic waste management. They deal with issues related to landfills and solid waste management, remediation of contamination, ecosystem protection and preservation, and the development of sustainable and environmentally safe methods for the allocation, development and utilization of natural and renewable resources.

Environmental Engineering is a multidisciplinary activity. Environmental engineers work closely with professionals from many other disciplines including biologists, chemists, economists, sociologists, lawyers, political scientists, urban and regional planners and others who play an integral role in defining and designing sustainable developments.

The program in Environmental Engineering at Carleton is structured to provide the undergraduate with sound training in the environmental aspects of chemistry and biology, which are considered essential to the in-depth appreciation of environmental problems.

The engineering component of the undergraduate degree consists of a strong engineering common core which emphasizes the pure sciences, engineering analysis, computer applications and engineering design. The Environmental Engineering component in the undergraduate degree program consists of a set of well structured courses that emphasize the conceptualization, mathematical modeling, engineering design and solution of problems in Environmental Engineering. The scientific and engineering aspects of the program prepare the ground for design and synthesis courses such as environmental planning and decision making and environmental impact assessment. The interdisciplinary aspects of the program are enhanced by the selection of elective courses in the arts and social sciences, which emphasize management, ethics, economics and law, as they relate to the environment. These courses are scheduled in the first and fourth years of the regular program and can be selected from the list in the *Engineering Program Guide*, which is available from the Faculty Registrarial Services office.

*Engineering Electives*

The engineering electives in the fourth year of the program must be selected from the following list unless alternatives are approved by the Department.

81.402★, 82.334★, 82.428★, 82.431★, 82.433★, 82.440★, 87.430★, 88.443★, 88.446★, 88.464★, 94.320★

**Environmental Engineering  
Second Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
65.280★	Environmental Chemistry	3	-	3	-	6
67.244★	Engineering Geology	-	3	-	3	6
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.257★	Introduction to Statistics	-	4	-	-	5
81.201★	Process Analysis for Environmental Engineering	-	2	-	3	5
81.202★	Microbiology	-	3	-	-	4
82.220★	Mechanics of Deformable Bodies	3	-	3	-	6
86.230★	Fluid Mechanics I	-	3	-	3	6
86.240★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.266★	Numerical Methods	3	-	1	-	5
		16	15	10	9	54



**Environmental Engineering  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
61.364★	Analysis of Ecological Relationships	-	-	-	4	3
65.232★	Analytical Chemistry I	3	-	3	-	6
81.301★	Environmental Engineering Unit Operations	-	3	-	3/2+1	6
81.302★	Environmental Engineering Systems Modelling	3	-	3/2+1	-	6
81.303★	Water Resources Engineering	-	3	-	1	5
81.304★	Containment and Pollutant Transport in the Environment	-	3	-	1	5
82.270★	Civil Engineering Materials	-	3	-	3	6
82.328★	Geotechnical Mechanics	3	-	3/2	-	5
82.437★	Municipal Hydraulics	3	-	3/2	-	5
91.380★	Engineering Economics	3	-	-	-	4
		15	12	8.5	11.5	51

**Environmental Engineering  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
81.403★	Air Pollution and Emissions Control	3	-	3/2+1	-	6
81.405★	Environmental Engineering Unit Processes	3	-	3/2+1	-	6
81.406★	Hydrogeology and Groundwater	-	3	-	3/2	5
81.411★	Waste Management	3	-	1	-	5
81.414★	Environmental Planning and Impact Assessment	-	3	-	3/2	5
81.497	Engineering Project	-	-	8	8	9
82.495★	Professional Practice	-	3	-	-	4
Elective★	Engineering (Note a)	3	-	3/2	-	5
Elective★	Engineering (Note a)	-	3	-	3/2	5
Elective★	Arts or Social Sciences	3	-	-	-	4
		15	12	15.5	12.5	45

**Note:** (a) Selected from the specified list; the actual weight is the assigned weight of the particular course.

## Mechanical Engineering Program

Mechanical Engineering by its nature is a highly diversified discipline, encompassing a range of activities from manufacturing processes and design to energy conversion and conservation. The main topic areas of the discipline are solid mechanics and materials, fluid mechanics and thermo-sciences which together provide the breadth necessary for the graduate mechanical engineer.

At Carleton University, students in their final three years in the Mechanical Engineering program will build upon the broad background in engineering developed in the first year common core program. In addition to the continued major emphasis on design, dynamics, thermodynamics and heat transfer, the student can choose elective courses that span a wide range of applied subjects like noise control, energy conversion and power generation, vehicle technology, aerodynamics and flight mechanics, automatic controls, etc., which reflect the wide range of interests of faculty members of the Department of Mechanical and Aerospace Engineering. In addition, the fourth-year student completes a major project on a topic of current interest in mechanical or aerospace engineering.

In select cases, students of high academic standing may be able to coordinate Engineering 88.497 project work with Masters thesis work in such a way that they can complete a M.Eng. program about one year after obtaining their B.Eng. degree. Interested students should consult the Departmental Chair or Supervisor of Graduate Studies near the end of their Third year.

### *Suggested Engineering Electives*

Any course numbered 86/87/88 for which the prerequisite and other nonstraints are satisfied.

### Co-operative Industrial Experience Program Option

The Department of Mechanical and Aerospace Engineering offers a Co-operative Industrial Experience Program Option for eligible students. Upon satisfactory completion of the option, students will receive the designation B.Eng. (Co-operative Industrial Experience Option) on their transcripts. For details, refer to Co-operative Industrial Experience Section on p. 89.

### Spacecraft Design

Aspects of spacecraft design are covered in both the Aerospace Program (Streams A, B and C), and also in the Mechanical Program, therefore both Aerospace and Mechanical students may follow their interests and accommodate this area of study. Mechanical students can achieve this by choosing appropriate electives such as 87.481★, 88.451★, 88.453★, together with the Space related individual project 88.497.

## Mechanical Engineering with Concentration in Computer-Integrated Manufacturing

A special concentration in Computer-Integrated Manufacturing (CIM) is available for students with an interest in this area. The concentration is designed to provide an understanding of the issues, concepts and techniques of applying computer technology to design and manufacturing. The concentration consists of the following courses: Year Three: One of Business 42.101★, 42.211★, Year

Four: Engineering 91.380★ and three of Engineering 87.434★, 88.451★, 88.453★, 88.464★, 88.474★, 88.475★, 94.310★.

The booklet *Engineering Program Guide*, available from the Faculty Registrarial Services office should be consulted for the appropriate selection of elective choices for this program. Students who wish to follow the CIM concentration should declare their intention at the beginning of the Second year. Those who successfully complete this option will receive the designation "Concentration in Computer Integrated Manufacturing" on their transcripts.

### Mechanical Second Year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus for Engineering Students	4	-	-	-	5
69.375★	Mathematical Methods I	-	4	-	-	5
86.201★	Engineering Graphics and Design	-	2	-	4	5
86.211★	Engineering Dynamics	3	-	3	-	6
86.222★	Mechanics of Solids I	3	-	3	-	6
86.230★	Fluid Mechanics I	-	3	-	3	6
86.240★	Thermodynamics and Heat Transfer	3	-	3	-	6
86.270★	Introduction to Engineering Materials	-	3	-	3	6
91.266★	Numerical Methods	-	3	-	1	4
23.100★	Communication Skills for Engineering Students	-	-	3	-	4
		13	15	12	11	53

### Mechanical Third Year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
86.304★	Dynamics of Machinery	3	-	1	-	5
86.322★	Mechanics of Solids II	3	-	3	-	6
86.330★	Fluid Mechanics II	3	-	3	-	6
86.340★	Applied Thermodynamics	-	3	-	1	5
86.491★	Mechanical and Aerospace Engineering Lab	-	1	-	5	5
88.302★	Machine Design and Practice	-	3	-	3	6
88.370★	Principles of Manufacturing Engineering	-	3	-	1	5
94.360★	Systems and Simulation	3	-	3	-	6
97.365★	Electrical Engineering	3	-	3/2	-	5
		15	14	11.5	11	54



**Mechanical  
Fourth Year**

		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
86.352★	Feedback Control Systems	3	-	1	-	5
86.412★	Engineering Materials: Strength and Fracture	3	-	-	-	4
86.491★	Mechanical & Aerospace Engineering Lab	1	-	5	-	5
86.495★	Professional Practice	-	3	-	-	4
88.403★	Mechanical Systems Design	3	-	3	-	6
88.446★	Heat Transfer	3	-	-	-	4
88.497	Engineering Project	-	-	8	8	9
91.380★	Engineering Economics	-	3	-	-	4
Elective★	Engineering (Note a)	3	-	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
Elective★	Engineering (Note a)	-	3	-	-	4
		15	15	12	8	52

**Note:** (a) Selected from available Engineering 86.4xx, 87.4xx or 88.4xx courses

**Mechanical-Computer Integrated Manufacturing Option  
Third Year**

		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
86.304★	Dynamics of Machinery	3	-	1	-	5
86.322★	Mechanics of Solids II	3	-	3	-	6
86.330★	Fluid Mechanics II	3	-	3	-	6
86.491★	Mechanical and Aerospace Engineering Lab	-	1	-	5	5
88.302★	Machine Design and Practice	-	3	-	3	6
88.370★	Principles of Manufacturing Engineering	-	3	-	1	5
94.360★	Systems and Simulation	3	-	3	-	6
97.365★	Electrical Engineering	3	-	3/2	-	5
One of:						
42.101★	Principles of Financial Accounting	-	3	-	-	4
42.210★	Management and Organizational Behaviour	-	3	-	-	4
		15	14	11.5	9	53

**Mechanical - Computer Integrated Manufacturing Option  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
86.352★	Feedback Control Systems	3	-	1	-	5
86.412★	Engineering Materials: Strength and Fracture	3	-	-	-	4
86.495★	Professional Practice	-	3	-	-	4
88.403★	Mechanical Systems Design	3	-	3	-	6
88.446★	Heat Transfer	3	-	-	-	4
88.497	Engineering Project	-	-	8	8	9
91.380★	Engineering Economics	-	3	-	-	4
Elective★	Engineering (Note a)	3	-	-	-	4
Three of:						
87.434★	Computational Fluid Dynamics	-	3	-	-	4
88.451★	State Space Modelling and Control Techniques	-	3	-	-	4
88.453★	An Introduction to Robotics	-	3	-	-	4
88.464★	Finite Element Methods	-	3	-	-	4
88.474★	Computer Integrated Manufacturing Systems	-	3	-	-	4
88.475★	CAD/CAM	-	3	-	-	4
		15	15	12	8	52

**Note (a):** Selected from available Engineering 86.4xx 87.4xx or 88.4xx courses

### Engineering Physics

Engineering Physics is concerned with the application of fundamental physical science to research and development in Engineering and Physics. Physics Engineers will be well versed in the fundamental science and technology of semiconductor devices, optical systems and devices, telecommunications and related computer technologies. A broad base in applied physics and electronics makes them well suited to work in a large number of high technology industries, including integrated circuit fabrication, electronic devices, microwave and optical systems and sensor technology. With appropriate choice of optional courses, students in this program could also pursue graduate studies in either engineering or pure and applied physics.

The Engineering Physics program can only be taken as a progressive coop program, with restricted enrollment and is a highly competitive program. The first year provides a basic background in mathematics, basic science, problem solving and also a specialized team design course. In the second and third years fundamental concepts in electronics and applied physics are introduced and expanded on. The fourth year allows the student sufficient flexibility to specialize in topics such as semiconductor devices and fabrication or applied optics. The program is a collaboration between the Department of Electronics and the Physics Department.

**Engineering Physics  
First Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
23.100★	Communication Skills for Engineering Students	-	1	-	2	4
65.111★	Chemistry for Engineering Students	3	-	3	-	6
69.104★	Calculus for Engineering Students	3	-	1	-	5
69.105★	Differential Equations	-	3	-	1	5
69.114★	Linear Algebra for Engineering Students	-	3	-	1	5
75.101★	Introductory Physics I	4	-	3	-	6
75.102★	Introductory Physics II	-	4	-	3	6
91.166★	Problem Solving and Computers	3	-	1	-	5
97.198★	Engineering Team Design	-	2	-	4	5
Elective★	Arts or Social Sciences	3	-	-	-	4
		16	13	8	11	51



**Engineering Physics  
Second Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.204★	Multivariable Calculus	4	-	-	-	5
69.375★	Mathematical Methods	-	4	-	-	5
75.222★	Wave Motion and Optics	3	-	3	-	
75.262★	Modern Physics I	-	3	-	-	
94.202★	Program Design and Construction	3	-	2	-	5
94.204★	Object Oriented Programming Laboratory	-	2	-	3	5
91.266★	Numerical Methods	3	-	1	-	5
97.251★	Circuits and Signals	3	-	3	-	6
97.257★	Electronics I	-	3	-	3	6
97.267★	Switching Circuits	-	3	-	3/2	5
		16	15	9	7.5	42

**Engineering Physics  
Third Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
75.364★	Modern Physics II	-	3	-	-	4
75.371★	Elements of Quantum Mechanics	3	-	-	-	4
75.387★	Mathematical Physics I	-	3	-	-	4
94.351★	Communication Theory	-	3	-	3	5
97.315★	Basic EM and Power	3	-	3	-	6
97.350★	Digital Electronics	2	-	3	-	5
97.359★	Electronics II	3	-	3	-	6
97.398★	Physical Electronics	3	-	3	-	5
97.399★	Electromagnetic Waves	-	3	-	3	5
		14	16	12	6	49

**Engineering Physics  
Fourth Year**

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
75.408★	Advanced Physical Lab	-	-	-	6	6
75.477★	Introduction to Quantum Mechanics I	3	-	-	-	4
75.4xx★	Physics Elective	3	-	3	-	4
75.4xx★	Physics Elective	-	3	-	3	4
91.380★	Engineering Economics	3	-	-	-	4
97.395★	Professional Practice	-	3	-	-	4
97.497	Engineering Project	-	-	8	8	9
97.4xx★	Engineering Elective (note a)	3	-	3/2	-	5
97.4xx★	Engineering Elective (note a)	-	3	-	3/2	5
Elective★	Arts or Social Sciences	3	-	-	-	4
Elective★	Arts or Social Sciences	-	3	-	-	4
		15	12	12.5	18.5	53

Note: (a) Selected from 97.4xx★

# Public Affairs and Management

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## Academic Administration

**Dean,** Allan M. Maslove

**Associate Dean (Undergraduate Programs),** Eileen Saunders

**Associate Dean (Research and Faculty Development),**  
Katherine Graham

**Assistant Dean/Registrar,** Denise McKenna

**Secretary of the Faculty Board,** Paul Attallah

## Teaching Staff

**Instructor**

**Cheryl Ann Stout,** B.A. (Carleton), M.A. (Ottawa)

Other teaching staff can be found in the individual discipline listings.

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## Directory of Offices

### **Office of the Dean**

Dean 520-3741

Associate Dean (Undergraduate Programs) 520-3741

Associate Dean (Research and Faculty Development) 520-3741

### **Registrarial Services**

D382 Loeb Building

Assistant Dean/Registrar 520-3902

Student Advising 520-3902

Student Records 520-3902

### **Business,** V. Kumar, Director

710 Dunton Tower, 520-2382

### **Central/East European and Russian-Area Studies,**

J. Debardeleben, Director

459 Paterson Hall, 520-2886

### **Criminology and Criminal Justice,** K. Kelly, Co-ordinator

D485 Loeb Building, 520-2588

### **Economics,** N. Rowe, Chair

C871 Loeb Building, 520-3744

### **International Affairs\*,** M. Rudner, Director

2A59 Paterson Hall, 520-6655

### **Journalism and Communication,** C. Dorman, Director

346 St. Patrick's Building, 520-7404

### **Law,** T.B. Dawson, Chair

C473 Loeb Building, 520-3691

### **Mass Communication,** P. Attallah, Associate Director

310 St. Patrick's Building, 520-7408

### **Political Economy\*,** W. Clement, Director

A818 Loeb Building, 520-7414

### **Political Science,** G. Williams, Chair

B640 Loeb Building, 520-2777

### **Public Administration,** F. Abele, Director

1021 Dunton Tower, 520-2547

### **Social Work,** A. Moscovitch, Director

509 Dunton Tower, 520-5601

**\*Graduate-level program.** For details please see *Graduate Studies and Research Calendar*.



## Degree and Certificate Programs

### Registrarial Services

Assistant Dean/Registrar: D. McKenna

Student Advising: J. Clarke, R. Jones

Student Records: S. Bauer

Registrarial Services provided by the Faculty of Public Affairs and Management are a source of general information on the academic programs within the Faculty of Public Affairs and Management and on the regulations which apply within the Faculty. Specific information about course content, subject matter, and the structure of B.A. or B.A. (Honours) programs is obtainable from the academic departments within the Faculty.

The Faculty of Public Affairs and Management offers programs in seven degrees and two certificates.

### Bachelor of Arts

#### B.A. (Honours) and B.A.

The four-year Honours B.A. provides rigorous and extensive study in one or two disciplines. The Honours degree is necessary for entry to certain fields of employment, and is a desirable preparation for graduate studies and professional training, including teaching.

The three-year B.A. program provides a liberal university education of value either as a general intellectual preparation for a great number of non-specialized careers, or as an introduction to subsequent specialized study.

### Bachelor of Commerce (B.Com.)

The four-year Honours program provides a foundation in the disciplines essential to careers in business. The program is offered by the School of Business.

### Bachelor of International Business (B.I.B.)

The four-year Honours program integrates language training and a year of study abroad with a specialist professional program to provide students with the knowledge, skills and orientation necessary to function effectively in the area of international business.

### Bachelor of Journalism (B.J.)

The four-year Honours program is designed to prepare students for careers in the mass media. The program is offered by the School of Journalism and Communication.

### Bachelor of Public Administration (B.P.A.)

The four-year Honours program provides a foundation in the disciplines relevant to the practice of public administration. The program is offered by the School of Public Administration.

### Bachelor of Social Work (B.S.W.)

The four-year Honours program combines a liberal arts education with professional preparation. The primary objective of the program is to provide students with the knowledge and skills necessary to begin entry level practice in social work.

### Certificate in Public Service Studies (C.P.S.S.)

This is a 6.0 credit program in public service subjects at the undergraduate level. The program is offered by the School of Public Administration.

### Certificate in Law Enforcement Studies (C.L.E.S.)

This is a 6.0 credit program designed for persons employed in the area of law enforcement, national security or corrections. The program is co-ordinated by the Departments of Law and of Sociology and Anthropology.

### Part-Time Study

Part-time study is a viable method of attaining a degree in the Faculty of Public Affairs and Management.

Part-time students who wish to limit their studies to evening and summer times should note that the following academic unit(s) teach a range of courses in the evening and during the summer that will permit students to complete a major in their discipline.

Economics  
Law  
Political Science

Students have the choice between full- and part-time registration and may freely alternate between the two.

Students wishing to pursue an Honours degree on a part-time basis are urged to consult with the appropriate academic unit(s) about the scheduling of courses.

### Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about **ltv** refer to p 53.

# Science

## Academic Administration

**Dean,** P.J.S. Watson

**Associate Dean and Director of the College of Natural Sciences,** I.B. Lambert

**Associate Dean,** B.C. Mortimer

**Assistant Dean and Registrar,** B.R. Lifeso

**Secretary of the Faculty Board,** G.R. Carmody

## Directory of Offices, Chairs, Directors and Advisers

### Office of the Dean

3240 Herzberg Physics, 520-4388

### Office of the Assistant Dean and Registrar

2201 Herzberg Physics, 520-4440

### Office of the College of Natural Sciences

2200 Wing, Herzberg Physics

### Biology, Chair, (to be announced)

583 Tory Building, 520-3888

### Chemistry, G.W. Buchanan, Chair

203 Steacie Chemistry, 520-3841

### Earth Sciences, R.P. Taylor, Chair

320 Tory Building, 520-4400

### Geography, C. Burn, Adviser

B349 Loeb Building, 520-2561

### School of Mathematics and Statistics, K.S. Williams, Director

4302 Herzberg Physics, 520-2155

### Physics, J.C. Armitage, Chair

3302 Herzberg Physics, 520-4377

### Psychology, J. Logan, Adviser

B550 Loeb Building, 520-2644

### Institute of Biochemistry, J. Sinclair, Director

### Institute of Environmental Science, P. Kruus, Director

### Integrated Science Studies Committee, G.R. Carmody, Chair

### Biotechnology Co-ordinators, J. Vierula and J. Sinclair

### Biology and Geology, S.B. Peck, Chair

### Biology and Physical Geography, C. Burn, Chair

### Biology and Psychology, J.B. Kelly, Chair

### Chemistry and Geology, R.A. Shigeishi, Chair

### Computer Science and Mathematics, L.D. Nel, Chair

### Physical Geography and Geology, F.A. Michel, Chair

### Committee on Admission and Studies, R.A. Shigeishi, Chair

### Science Technology Centre, J.D.E. Wong, Director

## General Information

The Faculty of Science includes the College of Natural Sciences and the School of Mathematics and Statistics and provides programs leading to the degrees of Bachelor of Science, Bachelor of Science in Environmental Science, Bachelor of Science in Integrated Science Studies, Bachelor of Science with Honours and the combined B.Sc./M.Sc. in Mathematics and in Statistics. The College of Natural Sciences includes the Departments of Biology, Chemistry, Earth Sciences, and Physics, and the Institutes of Biochemistry and Environmental Science.

## Honours Programs

The Science degree program with Honours is designed for those students who wish to deepen and extend their studies in one particular field or area for the purpose of preparing themselves for graduate studies, or for entrance to a Faculty of Education or other fields of scientific endeavour. Honours may be taken in Applied Physics, Biochemistry, Biology, Chemistry, Computational Chemistry, Chemistry with a Concentration in Business, Computer Mathematics, Computer Statistics, Environmental Science, Geology, Integrated Science Studies, Mathematics, Operations Research, Physical Geography, Physical Geography with a concentration in Geographic Information Processing, Psychology and Statistics. Combined Honours may be taken in Biochemistry and Biotechnology, Biology and Biotechnology, Biology and Geology, Biology and Physical Geography, Chemistry and Computer Science, Chemistry and Geology, Computer Science and Mathe-

matics, Geology and Physical Geography, and Neuroscience. The detailed programs are given in the appropriate departmental sections of the Calendar. The Honours program of each student is under the direct supervision of an Honours adviser of the student's department.

## Major Programs

The Science degree program is designed to provide specialization in one field of study called the Major field while permitting students to select other courses from complementary fields or disciplines in which they have a particular interest. The Major fields include Biochemistry, Biology, Chemistry, Computational Chemistry, Computer Mathematics, Geology, Integrated Science Studies, Mathematics and Statistics, and the corresponding programs are detailed in the departmental sections of the Calendar.

## Co-operative Education Opportunities

Students in the Honours B.Sc. Degree program have the opportunity to enrol in a Co-operative Education option in the degrees offered by the following departments and schools: Biology, Chemistry, Earth Sciences (Geology), Mathematics and Statistics, and Physics.

For general information on the Co-operative Education Option, please see p. 39.



## Minors

Minor specializations within the B.Sc. degree program are available in Business, Computer Science, Geographic Information Processing, Mathematics, and Statistics.

## Accelerated Progress

Students registered in Qualifying-University year who successfully complete two years or 10.0 credits at the University with a B- or 70 percent average may have their programs assessed for the purpose of reducing the number of credits required to graduate. This reduction may be made for any student registered in the Faculty of Science who satisfies the promotion requirements for First-year Science within one academic year after admission to Qualifying-University year Science with a GPA of not less than 7.0 over credits taken and with the recommendation of a Major department or interdepartmental program committee.

## Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *Itv* refer to p. 64.

## Admission Requirements

For the admission requirements to all Honours Programs offered by the School of Mathematics and Statistics, see p. 331.

### Qualifying-University Year in Science

The OSSD. A 75 percent average must be presented on a minimum of 10 Advanced Level credits at the Grade 11 and Grade 12 level including Chemistry and Physics, and Mathematics at the Grade 12 level. (See Admission chart, p. 44.)

### Bachelor of Science Honours Program

#### First Year

1. The successful completion of 5.0 credits approved for a Qualifying-University year Science program with a GPA of 8.0 or better, including a core of 0.5 credit in calculus and 2.5 credits chosen from biology, chemistry, geology, physics or mathematics. In addition a GPA of 8.0 or better is required in the three-credit core. The grade offered in calculus must be C- or better. No more than one of the two and one half remaining core credits may be offered with a grade below C-; or

2. The OSSD including six OACs with an average of 75 percent or better, or equivalent, including a core consisting of one OAC in calculus and at least two OACs chosen from algebra and geometry, biology, chemistry, and physics. In addition, an average of 75 percent or better is required in the core OACs. The grade offered in OAC calculus must be 60 percent or better. No more than one of the two remaining core courses may be offered with a grade below 60 percent.

For Honours in Psychology, an OAC in English is recommended.

The combined B.Sc./M.Sc. program in Mathematics, or in Statistics has a higher admission requirement than that stated above. Please refer to the School of Mathematics and Statistics departmental section for more details. (See p. 44.)

The Co-operative Education options have a higher admission requirement than that stated above. Please refer to the individual departmental sections for more details.

Students presenting credits for one or more repeated subjects or courses may not be admitted directly into an Honours program except on the recommendation of the department or committee concerned. Applicants should note that meeting the minimum requirements stated above does not guarantee admission to the B.Sc. programs. Students presenting OAC (or equivalent) aver-

ages lower than those stated above might be admissible on an individual basis after consideration of whether there are special circumstances which would permit their admission.

#### Advanced Standing

1. An in-course student wishing to enter an Honours program must apply to the Chair of the appropriate department or committee through the Registrarial Services office for the Faculty of Science.

2. For entry to an Honours program after the completion of First year, a student must have a GPA of 5.0 or better in the Honours subject(s), an overall GPA of 4.0 or better and the recommendation of the Honours department or committee. A student beginning the final 10.0 credits towards an Honours degree must present a GPA of 6.0 or better in the Honours subject(s), an overall GPA of 5.0 or better and the recommendation of the Honours department or committee. A student beginning the final 5.0 credits towards an Honours degree must present a GPA of 6.5 or better in the Honours subject or in each Honours subject and a GPA of 5.0 or better overall, as calculated for graduation.

3. Students applying for admission to Honours in Science at Carleton after having obtained a degree from Carleton or another university shall meet the same criteria as specified above.

4. No student may be admitted to Honours in Science without satisfying the requirements for entry to the corresponding Major program.

5. While the consent of the department or committee concerned is necessary for entry to an Honours program, the department cannot establish a standard of entrance based on a GPA which is higher than that established by the faculty as set out in the foregoing paragraphs. Students who consider that they meet the requirements for entry to an Honours program but who have not been accepted by any department may appeal to the Science Committee on Admission and Studies for review of the case. The Committee will report to the Science Faculty Board on all such appeals. It should be noted, however, that departmental capacities to accept all qualified Honours candidates may be limited by physical resources.

6. Students in the final year of a Major degree program wishing to be considered for entry to an Honours program must apply to the Office of Registrarial Services for the Faculty of Science to have their names withdrawn from the graduation list before March 1 of that year. If subsequently the student is not accepted for an Honours program, the student must reapply for graduation.

### Bachelor of Science, Major Program

For the admission requirements to all Major Programs offered by the School of Mathematics and Statistics, see p. 331.

#### First Year

1. The successful completion of 5.0 credits approved for a Qualifying-University year Science program with a GPA of 7.0 or better including a core of 0.5 credit in calculus and 2.5 credits chosen from biology, chemistry, geology, physics or mathematics. In addition, a GPA of 7.0 or better is required in the three-credit core. The grade offered in calculus must be C- or better. No more than one of the two and one half remaining core credits may be offered with a grade below C-; or

2. The OSSD including six OACs with an average of 70 percent, or equivalent, including a core consisting of one OAC in calculus and at least two OACs chosen from algebra and geometry, biology, chemistry, and physics. In addition, an average of 70 percent or better is required in the core OACs. The grade offered in OAC calculus must be 60 percent or better. No more than one of the two remaining core courses may be offered with a grade below 60 percent. Applicants from outside the province of Ontario must present acceptable equivalent certificates generally required for admission to universities in their own provinces or countries. Applicants should note that meeting the minimum requirements stated above does not guarantee admission to the B.Sc. programs.

Students presenting OAC (or equivalent) averages lower than those stated above might be admissible on an individual basis af-



ter consideration of whether there are special circumstances which would permit their admission.

#### *Advanced Standing*

1. To be admitted to Second year a student must have completed the equivalent of the First-year Science program with the required academic standing.
2. Applications for admission to the Third or subsequent years will be evaluated on their merits, and advanced standing granted for studies undertaken elsewhere when these are recognized as the equivalent of subjects offered at Carleton University.
3. Students not admitted to a degree program but taking courses at Carleton University as Special students may, on transfer to a Science degree program, receive credit for not more than 7.0 credits, 4.0 of which must meet the First-year promotion requirements.

## Course Requirements

### Arts and Social Sciences

Arts and social sciences courses and arts and social sciences electives are all approved courses offered in the Faculty of Arts and Social Sciences and in the Faculty of Public Affairs and Management.

## Qualifying-University Year in Science

A Qualifying-University year is offered for students who do not have the equivalent of the OSSD with six OACs. The program consists of the following 5.0 credits:

1. Mathematics 69.007★;
2. 2.5 credits selected from Chemistry 65.010, Physics 75.107★ and 75.108★, Biology 61.103★ and 61.104★, Geology 67.100 or 67.105, Mathematics 69.017★;
3. 2.0 other credits selected from any of the foregoing subjects not already presented and from other courses approved for a Qualifying-University year Science program as follows:  
*Science:* Biology 61.103★ and 61.104★, Chemistry 65.010, Geology 67.100 or 67.105, Physics 75.107★ and 75.108★, Mathematics 69.017★.  
*Arts or Social Sciences:* Any arts or social sciences course for which the student has the required prerequisite.  
*Computer Science:* Any Computer Science course for which the student has the required prerequisite except 95.101★.

### First Year

The First-year program leading to the degree of Bachelor of Science consists of 5.0 credits approved for a First-year Science program including:

- (a) 2.0 experimental Science credits chosen from two different departments of Biology, Chemistry, Geology or Physics;
- (b) 1.0 Science credit chosen from an approved third different experimental Science or approved credits in Mathematics or Computer Science;
- (c) 2.0 additional credits chosen from Science (not 60.101★, 60.102★ or 60.201★), Mathematics, Arts, Social Sciences, (except Interdisciplinary Social Sciences 03.300★), Computer Science (except Computer Science 95.101★) or Engineering.

Students who have been admitted to a Major or Honours program offered by the School of Mathematics and Statistics should see the First Year requirements listed on p. 331.

In establishing their First-year program of courses, students should consult with the chair of their Major department, the director of the Institutes of Biochemistry or Environmental Science, the chair of the Integrated Science Studies Committee, or the chair of the appropriate interdepartmental committee. Students who have not yet selected a Major field should select those First-year courses that will give them a wide choice of fields for the Second year.

## Courses Approved for a First-Year Science Program

Students who have been admitted to a Major or Honours program offered by the School of Mathematics and Statistics should also see the additional courses listed on p. 332.

### Science Courses

#### *Biochemistry*

63.220★

#### *Biology*

61.103★, 61.104★

or if these courses have been completed prior to First year, with permission, any two of:

61.201★, 61.202★, 61.214★, 61.220★

#### *Chemistry*

65.010, 65.100; or if this course has been completed prior to First year, with permission: 65.211★, 65.212★, 65.223★, 65.224★, 65.226★, 65.227★, 65.228★, 65.232★, 65.233★ or 65.280★

#### *Computer Science*

95.102★, 95.104★, 95.105★, 95.106★, 95.107★, 95.108★

#### *Geography*

45.105

#### *Geology*

67.100, 67.105; or if one of Geology 67.100 or 67.105 has been completed prior to First year, with permission, any two of: 67.223★, 67.225★, 67.228★, 67.231★, 67.236★, 67.238★, 67.281★, 67.282★, 67.285★

#### *Mathematics*

69.017★, 69.107★, 69.117★, 69.102, 69.112, 69.207★, 69.217★, 69.241★, 69.257★ or any Mathematics course for which the student has the prerequisite.

#### *Physics*

75.101★, 75.102★, 75.107★, 75.108★; or if one of 75.101★ and 75.102★ or 75.107★ and 75.108★ has been completed prior to First year, with permission, any two of: 75.211★, 75.222★, 75.223★, 75.224★, 75.235★, 75.236★, 75.262★, 75.291★, 75.292★

### Arts and Social Sciences Courses

Any course available from the Faculty of Arts and Social Sciences or the Faculty of Public Affairs and Management with the exception of:

- (a) Social Sciences courses as listed on p. 119. Advanced courses in certain disciplines may be included if the prerequisite has been completed prior to First year;
- (b) any Computer Science course (including Interdisciplinary Social Sciences 03.300★);
- (c) any course offered by the Departments, Schools or Institutes in the Faculty of Science and;
- (d) any Engineering course.

## Courses for Subsequent Years

Students in Honours programs offered by the School of Mathematics and Statistics should see the section titled "Honours Core Requirements" on p. 332.

### Honours Program

Students for a degree with Honours will ordinarily take at least 15.0 credits beyond the completion of First year. (See Honours admission requirements, p. 116 regarding transfers to the Faculty of Science from other institutions or faculties):

- (a) at least 6.0 more credits in the Honours subject;
- (b) at least 2.0 Science credits above the First-year level in a de-



partment or departments other than the Honours department;  
 (c) sufficient elective credits to meet the program requirements of 2.0 Arts or Social Sciences elective credits and 1.0 free elective credit.

For continuance in an Honours program, the student must maintain a GPA of 5.0 or better in the Honours subject(s), an overall GPA of 4.0 or better and be recommended by the Honours department or committee. A student beginning the final 10.0 credits towards an Honours degree must present a GPA of 6.0 or better in the Honours subject(s), an overall GPA of 5.0 or better and the recommendation of the Honours department or committee. At the beginning of their last 5.0 credits students must have:

- (a) a GPA of 6.5 or better in the Honours subject or in each Honours subject;
- (b) an overall GPA of 5.0 or better;
- (c) a grade of C- or better in at least half of the credits to be credited toward their degree;
- (d) the recommendation of their Honours department or committee. Otherwise the student may not remain in Honours;
- (e) students who have a GPA of 6.3 or 6.4 in their Honours subject may be allowed to continue at the discretion of the individual Department, Institute or Committee.

**Note:** B.Sc. Combined Honours programs with Computer Science have a higher GPA requirement for continuance than that stated above. Please refer to the appropriate departmental section of this Calendar for further details (p. 369 for the Department of Physics or p. 330 for the School of Mathematics and Statistics or p. 182 for the Department of Chemistry).

The combined B.Sc./M.Sc. program in Mathematics, or in Statistics has a higher GPA requirement for continuation than that stated above. Please refer to the School of Mathematics and Statistics departmental section for more details. (See p. 88).

The B.Sc. Co-op programs in the Departments of Biology, Chemistry, Earth Sciences (Geology), and Physics and the School of Mathematics and Statistics have a higher GPA requirement for continuation than that stated above. Please refer to the appropriate departmental section of this Calendar for further details.

The course patterns for each Honours program are detailed individually, and requirements lie within the discretion of the appropriate department or committee. The student should therefore read the appropriate Calendar instructions and consult the chair of the appropriate department or committee. Capacities for Honours students will depend on departmental resources and the nature of the program.

Regulations governing Honours essays, theses or special projects are detailed in the departmental sections of this Calendar.

A student who fails to maintain Honours standing may not remain in Honours, and must discuss a new program with the chair of a department.

### Environmental Science Program

For course requirements see p. 243.

### Integrated Science Studies Program

For course requirements see p. 295.

### Combined B.Sc./M.Sc. Program in Mathematics or in Statistics

For course requirements see p. 337.

### Major Program

Students in Major programs offered by the School of Mathematics and Statistics should see the section titled "Core Requirements" on p. 336.

Candidates will ordinarily take at least 10.0 credits beyond the completion of First year:

- (a) at least 4.0 more credits in the Major subject;
- (b) at least 2.0 Science credits above the First-year level in a de-

partment or departments other than the Major department;  
 (c) sufficient electives to meet the program requirement of 2.0 Arts or Social Sciences elective credits and 1.0 free elective credit.

The program of each student is under the direct supervision of a full-time member of the department in which the student takes his or her Major. In several departments most of the more advanced courses will be given, in whole or in part, during the day only. Candidates are advised to consult their Major departments as early as possible to arrange their programs.

### Science Continuation Courses

1. Students who are admitted to any program offered by the School of Mathematics and Statistics are not required to take Science Continuation courses.

2. All courses offered in the Faculty of Science beyond First year except Science 60.201★, 60.202★, Biology 61.216★ and Geology 67.241★, 67.242★, 67.243★.

3. All courses offered in Computer Science except Computer Science 95.101★. A maximum of two half credits at the 100-level in Computer Science (excluding 95.101★ completely) may be used as Science Continuation course credits.

Technology, Society, Environment (TSE) 59.301★, 59.302★, 59.350★, 59.401★, 59.402★, 59.403★, 59.405★, 59.406★, 59.407★. (Biology Major and Honours students may use these courses only as free electives. Integrated Science Studies students may take these courses as part of their program but may not count them as part of their science sequence.)

Geography 45.210★, 45.211★, 45.302★, 45.303★, 45.307★, 45.311★, 45.312★, 45.313★, 45.315★, 45.318★, 45.319★, 45.400★, 45.402★, 45.403★, 45.406★, 45.411★, 45.412★, 45.413★, 45.414★, 45.417★, 45.418★.

Psychology 49.200, 49.220★, 49.270★, 49.300, 49.320, 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.370, 49.372★, 49.380, 49.401★.

3. All courses offered in the Bachelor of Engineering program beyond First year, subject to the approval of the Faculty of Engineering.

**Notes:** 1. Science 60.101★, 60.102★ and 60.201★, Computer Science 95.101★ and Interdisciplinary Social Sciences 03.300★ are not acceptable for credit in the Faculty of Science. For students in programs offered by the School of Mathematics and Statistics, Mathematics 69.241★ is not acceptable for credit.

2. The following courses are acceptable only as free electives for Science students (except for students admitted to a program offered by the School of Mathematics and Statistics): Biology 61.192★, 61.193★, 61.216★, Chemistry 65.103★, Geology 67.104★, 67.241★, 67.242★, 67.243★, Mathematics 69.185★, Physics 75.190, Science 60.202★. In addition, Interdisciplinary Social Sciences 03.401★ and 03.402★ are acceptable only as free electives.

3. For students admitted to a program offered by the School of Mathematics and Statistics:

i. the following additional courses are also acceptable as Science courses: Biology 61.192★, 61.193★, 61.216★, Chemistry 65.103★, Geology 67.104★, 67.241★, 67.242★, 67.243★, Physics 75.190, Science 60.202★.

ii. the following courses are acceptable only as "Free Electives": Interdisciplinary Social Sciences 03.401★, 03.402★, and Mathematics 69.185★/Computer Science 95.185★.

4. All Science Continuation courses taken outside the Major department must be approved by the student's Major department or committee.

5. Courses counted in the Science sequence of the Integrated Science Studies Program will be determined and approved by the Integrated Science Studies Committee.

6. Biology Major and Honours students should refer to *Notes on Programs* (p. 155) for special Science Continuation course provisions that apply to them.



## Social Sciences Courses not Acceptable as Social Sciences Electives

Social Sciences courses are available in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management.

### *Business*

42.101★, 42.102★, 42.104★, 42.105★, 42.142★, 42.201★, 42.202★, 42.230★, 42.270★, 42.301★, 42.308★, 42.400★, 42.401★, 42.402★.

### *Economics*

43.220, 43.240★, 43.404★, 43.405★, 43.476★, 43.477★.

### *Geography*

45.105, 45.210★, 45.211★, 45.302★, 45.303★, 45.307★, 45.311★, 45.312★, 45.313★, 45.315★, 45.318★, 45.319★, 45.400★, 45.402★, 45.403★, 45.406★, 45.411★, (Geology 67.415★), 45.412★, 45.413★ (Engineering 81.303★, Geology 67.419★), 45.414★, 45.417★ (Engineering 82.424★, Geology 67.424★), 45.418★.

### *Interdisciplinary Social Sciences*

03.300★.

### *Psychology*

49.200, 49.220★, 49.270★, 49.300, 49.320, 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.370, 49.372★, 49.380, 49.401★.

### *Sociology*

53.370.

## Academic Standing

### Grading System

Standing in courses will be determined by departments and will be shown by alphabetical grades. (See p. 48).

Standings to represent special circumstances are as follows:

#### *Aeg*

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the Science Committee on Admission and Studies in response to a student's application which meets the stipulations for examinations.

#### *Aud*

Indicates course is not being taken for academic credit.

#### *Ch*

Credit granted under Challenge for Credit policy.

#### *F*

Failure. No academic credit.

#### *Wdn*

Withdrawn in good standing. No academic credit.

#### *Abs*

Failure due to absence from the final examination where the necessary term work has been completed. No academic credit.

#### *Def*

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Science Committee on Admission and Studies for deferred examination privileges.

#### *IP*

In Progress.

### Course Load

The normal course load for a full-time student in the Faculty of Science, during the Fall/Winter session, is the equivalent of 5.0 credits.

its. The normal course load for a part-time student, in the Fall/Winter session, is the equivalent of 2.0 credits.

Students may register for a maximum of 2.0 credits in the Summer session.

A student may exceed the normal course load in the Fall/Winter session only with the Registrar's permission, which may be granted if a C average is maintained overall and in the Major field, and if recommended by the Major department. Part-time students may be granted permission if a C average is obtained in a minimum of 2.0 credits in the previous session.

### Promotion and Failure

Students who have been admitted to a Major of Honours program offered by the School of Mathematics and Statistics should see the "Promotion and Failure" regulations on p. 332.

#### *Full-time Students*

Full-time students in First-year Science, in order not to fail their year in May, must, by then, have passed at least 3.0 credits. Students who fail to meet this requirement must apply by June 30 for readmission to the Faculty of Science; students who fail First-year Science for a second time are not eligible to apply for readmission to the Faculty of Science.

To be promoted to the credit system from First year, a full-time Science student must have passed at least 4.0 credits including at least 3.0 credits in Science. The 3.0 credits in Science must include at least 1.0 credit in each of two different experimental Sciences. The remaining Science credit may be chosen from an approved different experimental Science or from approved credits in Mathematics or Computer Science. In addition, students must obtain grades of C- or better in at least 2.0 credits, including at least 1.0 credit in their intended Major.

For a student without advanced standing in any First-year courses, these 4.0 credits must be selected from those approved for a First-year Science program.

For a student (not repeating First year) with advanced standing in some First-year courses, these 4.0 credits must include sufficient courses to complete the First-year Science program; the remainder of the 4.0 credits may include courses beyond the First year provided the student has retained credit for the prerequisite First-year courses. In the Major program one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have attained a grade of C- or better in 1.0 credit from each of the Science and Non-Science sequences.

This must be accomplished in one calendar year (12-month period) with not more than 2.0 credits of Summer courses. The course work of those First-year Science students who almost meet promotion requirements is reviewed by the Dean's Committee on Promotion.

A full-time student who does not meet the requirements of promotion by the end of August examinations will have failed First year.

#### *Part-time Students*

Students who have been admitted to a Major or Honours program offered by the School of Mathematics and Statistics should see the "Promotion and Failure" regulations on p. 332.

To be promoted to the credit system from First year, part-time students must, in the first 6.0 credits of final examinations, have passed at least 4.0 credits approved for a First-year Science program including at least 3.0 credits in Science. The 3.0 credits in Science must include at least 1.0 credit in each of two different experimental Sciences. The remaining Science credit may be chosen from an approved different experimental Science or approved courses in Mathematics or Computer Science. In addition, students must obtain grades of C- or better in at least 2.0 credits, including at least 1.0 credit in their intended Major. Part-time students who fail more than 2.0 full-credit equivalents in succession must apply for readmission to the Faculty of Science.



In the Major program, one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have obtained a grade of C- or better in 1.0 credit from each of the Science and Non-Science sequences.

#### *All Degree Students*

Failed students within the limitations specified above may repeat First year, retaining credit toward their degree (but not toward the completion of First year) for all courses graded C- or better.

A student repeating First year may register only in courses approved for a First-year Science program, but may include 2.0 credits beyond the First year provided the student has retained credit for the prerequisite First-year course.

A student who fails First year a second time may not re-enter a degree program in the Faculty of Science.

After promotion to the credit system, the student will accumulate course credits under a pattern approved by the appropriate department or committee.

## Continuation

Honours degree students have the privilege of repeating or replacing courses subject to the following restriction: After admission to the credit system, the ratio of total number of (full-course equivalent) examinations to the total number of credits required may not exceed six to five. In particular, a student who requires 15 more credits has the equivalent of at most 18.0 full-credit examinations available to complete the program.

Major degree students have the privilege of repeating or replacing courses, subject to the following restriction: After admission to the credit system the ratio of total number of (full-course equivalent) examinations to the total number of credits required may not exceed three to two. In particular, a student who requires ten more credits has the equivalent of at most 15.0 full-credit examinations available to complete his or her program.

The number of examinations available to a student who transfers from another institution or from another program, will be determined on a pro rata basis and will be specified at the time of admission.

When a student is examined in a course that previously has been declared extra to the degree program, this examination does not affect the remaining number of available examinations.

Students who cannot complete their program without exceeding the available number of examinations forfeit their undergraduate status in the Faculty of Science.

## Graduation

### General Regulations

1. Every student will be required to complete the last 5.0 credits at Carleton University unless authorized by the Faculty of Science to take courses at the University of Ottawa under the Undergraduate Exchange Agreement.
2. A student who takes courses elsewhere with a Letter of Permission from the Science Committee on Admission and Studies may, with the approval of the appropriate department, school or institute or committee, use the credit value but not the grades to meet graduation requirements;
3. Students who transfer to the Faculty of Science from another institution must include in the courses presented for degree (whether obtained at Carleton or elsewhere) at least:
  - (a) 2.0 credits of Arts or Social Sciences electives if on transfer they received credit for less than ten credits;
  - (b) 1.0 credit of Arts or Social Sciences electives if on transfer they received credit for 10.0 or more credits.

**Note:** See also University graduation regulations, p. 49.

## Honours Degree Students

To qualify for graduation with a Bachelor of Science degree with Honours a student must:

1. present credits for at least 20.0 credits of approved full credits (or equivalent) beyond Qualifying-University year, with not more than 2.0 credits below the 100-level and not more than 7.0 below the 200-level;
2. meet the requirements of the Faculty of Science and of the appropriate department, school, institute or committee with respect to both course and grade requirements;
3. after entry to the credit system, have completed the program with not more than 6.0 (full credit equivalent) examinations for every 5.0 credits required. (Examinations include course repetitions and replacements.) A part-time student or a full-time student who has interrupted his or her studies must complete the program within seven years after entry to courses beyond First year;
4. include at least 2.0 credits in the Honours subject or subjects in the last 5.0 credits taken;
5. be recommended by the appropriate department, school, institute or committee and the Science Faculty Board.

The Honours degree will not be awarded to students taking fewer than 5.0 credits at Carleton.

## Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the GPA as follows:

### *Highest Honours*

10.0 — 12.0 in Honours subject, and  
8.0 or better overall

### *High Honours*

9.0 or better in Honours subject, and  
7.0 or better overall

### *Honours*

6.5 or better in Honours subject, and  
5.0 or better overall

Departments, Schools or Institutes may recommend the higher designation of Honours degree in the case of a student one of whose indices is in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of degree for students with Combined Honours, the average is computed on the basis of the weighted average of the required number of Honours credits in the two subjects. If agreeable to the committee concerned, the average may be taken in each of the two subjects and the simple average of the two may be used.

Departments, Schools or Institutes may use discretion for establishing the class of degree in counting the number of Honours credits where students have more than the minimum number of credits.

## Environmental Science Degree Students

See p. 243.

## Integrated Science Studies Degree Students

See p. 295.

## Combined B.Sc./M.Sc. in Mathematics or in Statistics Students

See p. 337.

## Major Degree Students

To qualify for graduation students must:

1. present credits for 15.0 approved full courses (or equivalent) beyond Qualifying-University year with not more than 2.0 credits below the 100-level and not more than 7.0 below the 200-level;
2. have a grade of C- or better in at least half of the 15.0 credits;
3. have an average of C- or better in the credits in their Major subject or subjects;
4. after entry to the credit system, have completed the program with not more than three (full-course equivalent) examinations for every 2.0 credits required. (Examinations include course repetitions and replacements.) Part-time students or full-time students who have interrupted their studies must complete the program within seven years after entry to courses beyond First year;
5. include at least 2.0 credits in the Major subject or subjects in the last 5.0 credits taken for credit;
6. be recommended by the Major department, school or institute and the Science Faculty Board.

To meet the requirements for the C- average in the Major stated above, only those credits in the Major necessary to make up the required total for graduation in the Major department, school or institute need be counted. All obligatory courses must be counted.

Graduating students in a Major program of the Faculty of Science will be designated as graduating "with Distinction" if:

1. they have no course failures, course repetitions or course replacements on their Carleton record after promotion to the course-credit system;
2. they have achieved an overall GPA of 8.0 or better calculated on their Carleton record, including all credits extra to the degree;
3. they have successfully completed at Carleton at least 10.0 credits counted toward the degree;
4. after promotion to the course-credit system, they have achieved a GPA of 9.5 or better calculated on all Carleton credits being counted toward the degree.

## Academic Clubs and Societies

The following clubs and societies operating on the campus serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The

societies listed here are particularly pertinent for students registered in the Faculty of Science.

*The Biology Society* sponsors academic and social events, promotes informal contact between students and faculty, and helps acquaint students with on-going biological research.

*The Canadian Society for Chemistry*, through its Carleton University Student Chapter, is active in sponsoring a number of professional and social activities throughout the year.

*The Carleton Computer Science Society (CCSS)* is an active society looking to create ties to its membership. It works for its members in several ways: from informal academic support to varied athletic and social gatherings. Throughout the year the CCSS offers a t-shirt design contest, inexpensive course notes, free pizza and movie nights, the occasional faculty and grad hockey game, and the world's best programming contest. The year ends with a huge barbecue and one very special 'Late Night Debugging Session'.

*The Geology Society* sponsors lectures on geological topics, and organizes field trips and social events for all undergraduate students with an interest in geology.

*CMASS, the Carleton Mathematics and Statistics Society*, features "Naive-Level Seminars" designed by and for mathematics undergraduates. The society office promotes contact between students at different stages in their studies.

*The Physics Society* sponsors visits to government and industrial laboratories in the Ottawa area, arranges special lectures on physics topics and social events for those interested in physics.

## Science Courses without Prerequisites and Recommended to Students in Other Faculties

### *Biology*

61.192★, 61.193★

### *Chemistry*

65.103★

### *Geology*

67.100, 67.104★, 67.105, 67.241★

### *Physics*

75.190

### *Science*

60.101★, 60.102★, 60.201★, 60.202★





# Academic Programs, Units and Courses

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- Architecture
- Art and Culture: Art History, Film Studies, Music
- Art History
- Biochemistry
- Biology
- Biotechnology
- Business
- Canadian Studies
- Central/East European and Russian-Area Studies
- Chemistry
- Child Studies
- Civil and Environmental Engineering
- Classics
- Cognitive Science
- Comparative Literary Studies
- Computer Science
- Criminology and Criminal Justice
- Directed Interdisciplinary Studies
- Earth Sciences
- Economics
- Electronics
- English Language and Literature
- Environmental Science
- Environmental Studies
- Film Studies
- French
- Geography
- German
- History
- Humanities
- Industrial Design
- Integrated Science Studies
- Interdisciplinary Studies
- Italian
- Journalism and Communication
- Law
- Law Enforcement Studies (Certificate)
- Linguistics and Applied Language Studies
- Mass Communication
- Mathematics and Statistics
- Mechanical and Aerospace Engineering
- Music
- Philosophy
- Physics
- Political Science
- Population Studies
- Psychology
- Public Administration
- Religion
- Russian
- Social Work
- Sociology and Anthropology
- Spanish
- Systems and Computer Engineering
- Technology, Society, Environment Studies
- Women's Studies





# Architecture

202 Architecture Building  
Telephone: 520-2855

## Academic Administration

Director, B. Gianni

Registrar, A. Khan

Director, Architectural Research Group, B. Gianni

## Teaching Staff

### Professors

**K.S. Andonian**, *M.Arch. (Yerevan Polytechnic), M.A.Sc., Ph.D. (Waterloo)* • **S. Gulzar Haider**, *B.Sc. (West Pakistan), M.S., B.Arch., Ph.D. (Illinois)* • **H. Stanley Loten**, *B.Arch., M.Arch. (Toronto), Ph.D. (Pennsylvania), M.R.A.I.C.* • **Donald Westwood**, *Dip.Arch. (The Polytechnic), R.I.B.A.*

### Associate Professors

**J. Barry Bell**, *B.E.S., B. Arch. (Waterloo), M.Phil. (Cambridge)* • **M. Bressani**, *B.Sc., M.Arch. (McGill), M.Sc. (Massachusetts Institute of Technology), Docteur de l'université de Paris-Sorbonne* • **Tom Dubicanac**, *B.Arch., M.Arch. (Detroit)* • **Benjamin Gianni**, *B.A. (Pennsylvania), M.Arch. (Yale)* • **Charles C. Gordon**, *B.A. (Amherst) Ph.D. (North Carolina)* • **Gilbert F. Sutton**, *B.Arch. (Toronto), M.R.A.I.C., M.E.S. (York)*

### Assistant Professor

**L. Fontein**, *B.Arch. (Toronto), M.Arch. (McGill)*

### Adjunct Research Professors

**J. Archer** • **H. Cameron** • **J. Cook** • **S. Grossmann-Hensel** • **L. Medek** • **A. Rankin**

### Adjunct Professors

**G. Milne** • **J. Strutt**

### Sessional Lecturers

**S. Boyle** • **Y. Cazabon** • **J. Cook** • **R. Cunliffe** • **A. Dicastrì** • **B. Eames** • **S. Fai** • **B. Firestone** • **T. Fuglem** • **G. Fulton** • **H. Roseman** • **J. Grant-Henley** • **R. Reinhardt** • **N. Semanyk** • **J. Smith** • **K. Thorslund** • **J. Van Nostrand** • **J. Vandenberg** • **T. Wolstenholme** • **M. Zurakowski**

### Photographic Supervisor/Instructor

**D. Lepage**

## Bachelor of Architectural Studies Degree Program

The Bachelor of Architectural Studies degree is awarded on the successful completion of a four-year program of studies. Candidates should note that undergraduate studies are normally followed by professional studies at the graduate level. Like the profession of Architecture, the educational program can be rigorous in its dual demands of academic production and design creativity. It is recommended that full-time students do not engage in employment during the Fall/Winter session.

The curriculum at Carleton provides the student with the theoretical, technical, and formal knowledge and skills necessary for creative and responsible intervention in the built environment. In order to investigate and generate project proposals, the architect should be endowed with a range of sensibilities that emerge as synthetic vision in the design studio. The program has two components relating to this: a mandatory core that provides the essential knowledge and experience; and a series of elective courses, becoming more extensive in the upper years, that allow students to develop their own areas of architectural interest.

The degree, in tandem with professional graduate studies, is accredited by the Canadian Architectural Certification Board as a prerequisite to certification and registration to practise as an architect in provincial associations — subject to assessment of each applicant's record. Information concerning mandatory work experience and other requirements for registration may be obtained from the professional associations of the provinces of Canada.

The resources of the Ottawa area, including those of Carleton University, are unique in their concentration of specialized personnel, laboratories, libraries, and other facilities. They provide the opportunity and capability for a wide range of multidisciplinary academic and research programs in such fields as architecture, housing, urban studies, industrialized building, and the history and theory of architecture.

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## Combined B.A. (Honours) and B.A. Degree in Art History and Architecture

The School of Architecture co-operates with the School for Studies in Art and Culture in offering Combined B.A. (Honours) and B.A. degrees in Art History and Architecture. (See p. 144.)

## Academic Clubs and Societies

The School of Architecture Association of Students (SAAS) organizes special events several times a year, and is a focus for student discussion.

## Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *itv* refer to p. 64.

## Program Requirements

In 1998-99, the School introduced a revised curriculum to address ongoing changes in the practice of Architecture. **Students who entered First Year of the program in 1998-99 or later will be registered in the Bachelor of Architectural Studies (non-professional) degree program and are subject to the revised Program Requirements below.** Upon completion of the B.A.S. program, students wishing to obtain a professional degree would apply to continue into a two-year professional Master of Architecture program.

**Students who entered First Year prior to 1998-99, or students who transferred into Second Year of the Architecture program in 1998-99 will be registered in the B.Arch. degree program and are subject to the old Program Requirements as listed in the 1997-98 Undergraduate Calendar.** (Copies are available from the School's Office.)

## Regulations

The following regulations apply to all students enrolled in the School. Students are urged to seek the advice of their instructors on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, appeals and review of grades.

The undergraduate Architecture program was revised in 1992 and again in 1998. Students admitted in 1998 or later follow the program as it appears in this Calendar. Students admitted prior to 1998 will normally follow the Calendar of the date of their entry into the program.

### Student Responsibility

The student is responsible for knowing the regulations of the School of Architecture and for complying with them. Any exceptions to the regulations must be approved in writing by the School of Architecture Committee on Standing, Promotion and Awards (CSPA).

### Exceptions to the Regulations

Regulations may be waived for academic, medical or compassionate reasons. The CSPA is responsible to the Architecture Faculty Board for considering students' requests for special consideration regarding the regulations. Requests should be made in writing to the Chair of that committee.

## Admission and Readmission Requirements

### First Year

To be eligible for admission to the First year of the Bachelor of Architectural Studies program, the applicant must have the OSSD or equivalent with six OAC's, including Physics and either Calculus or Algebra/Geometry with an average of 65 percent or better or have completed the Qualifying-University year at Carleton University with a GPA of 4.0 completed over 5.0 credits and grades of C- or better in Mathematics and Physics.

Refer to the section on Admissions in the general regulations of the Calendar for additional admission information. (See p. 41.)

### Selective Admission

It should be noted that the number of student spaces in the School is limited. Because of this, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the program through a portfolio of creative work, and academic grades. Members of the Admissions Committee of the School of Architecture are available by appointment during the academic year to answer enquiries regarding the School's program.

### Advanced Standing

Applications for admission with advanced standing to the First or subsequent years of the Bachelor of Architectural Studies program will be evaluated on an individual basis. Before students apply they should note that although the School may accept previous course work for credit, there is no guarantee that a registration committee such as the Canadian Architectural Certification Board will do so as credit toward professional registration. Advanced standing for academic subjects completed at Carleton or at another university or college may be accepted where a grade of C- or better has been achieved if the courses are recognized as the equivalent of corresponding courses offered at Carleton. Advanced standing will only be recognized upon admission to the School. Applications for advanced standing must be processed before the session deadline for course changes in the term in which the student is first enrolled.

### Readmission

Students who have been absent from the University for two consecutive Fall/Winter sessions and the intervening Summer session (except students holding a Letter of Permission from the Carleton School of Architecture) are required to apply for readmission before registration.

Former students who have forfeited their undergraduate status must request readmission by writing to the Director of the school and the request must be accompanied by an updated portfolio of work. The decision whether or not to readmit will be made by the Faculty Board. If readmitted, the student will return on probation.

Applications for readmission (obtainable from the Office of Admissions) must be filed before May 1 for the Fall/Winter session.

### Proficiency in English

Since the instructional language of the University is English, applicants must be able to understand and be understood in English, both written and oral. Applicants whose mother tongue is other than English must clearly exhibit this ability. (See p. 32.)

## Registration

### Registration

In order to facilitate more effective academic planning for the following school year, students are asked to declare their intention not to continue in the program by July 1.

Students who have been absent from the University for one full Fall/Winter session (September through April) should notify the School by July 1 of their intention to register for the following Fall/Winter session.

Students are to complete their course registration by the registration periods shown for the session or term in the schedule for the Academic Year on p. 12.

### Late Registration

Registration after the registration period incurs a late registration fee. Registration is not permitted after the late registration period.

### Course Credit Value

Credit values are indicated against course descriptions. Courses marked ★ are half-credits, indicated 0.5 on record documents.

### Course Load

The program in the School of Architecture is based on an annual course load of 5.0 credits for four years.

### Student Records

Incorrect address information will delay the receipt of awards, examination results and changes in academic status. Students must notify the School and the Divisional Registrar's Office immediately of any change in permanent address.

## Promotion and Continuation

### Standing in Courses

Standing in courses will be determined by the School of Architecture. Standing in courses will be shown by alphabetical grades. (See p. 48).

Other notations are as follows:

#### *Aeg*

Pass standing granted under special circumstances. Aegrotal standing is granted only by a faculty committee, in response to a student's application. (See Deferred Final Examinations, p. 49.)

#### *Aud*

Indicates course is not being taken for academic credit.

#### *F*

Failure. No academic credit.

#### *Abs*

Absent from final examination. No academic credit. Abs is usually equated to failure.

#### *Wdn*

Withdrawn in good standing. No academic credit.

#### *Def*

Indicates that deferral of final grade has been approved by the CSPA. If the Deferred examination is not written, or if the incomplete work is not submitted by the scheduled date, the *Def* will be replaced by a grade based on the work completed prior to the granting of the deferral. (See also Deferred Final Examinations, p. 49.)

#### *Ch*

Credit granted under Challenge for Credit policy.

## Computation of Averages

The 12-grade-point system is set out on p. 48.

GPA's are calculated by dividing the total accumulated grade points by the total credits.

Promotion decisions are based only on courses taken while the student is registered in the Bachelor of Architectural Studies program.

### Promotion

Students who achieve the necessary cumulative GPA will be promoted to the next year of the program. In arriving at the cumulative GPA, all grades achieved while registered in the Bachelor of Architectural Studies degree program are averaged.

### Design Studio Courses

In each Design Studio course, a grade of *C-* or better is required for the student to be eligible for promotion. Students who, during one year of the program, achieve a passing mark in the Design Studio courses in one term and a *D+*, *D*, or *D-* in the other, and whose GPA in studio is 3.5 or better may apply to the School for a discretionary decision on promotion. These applications must be made prior to June 1. Students must submit their studio portfolio for review by faculty members teaching in that year. In these cases, a discretionary decision will be made to promote or to prescribe further study before promotion. The student will be informed of this decision by the School.

### All Other Courses

In the combined courses without design studio, a GPA of 3.5 or better is required, to be promoted to the next year of the program.

### Design Studio Course Sequence

All studios must be taken in sequence. In exceptional circumstances, students may seek approval from CSPA for exemption from this regulation.

### Deficiencies

Students who are not on probation and who have not more than 1.0 credit deficiency may proceed to the next program year. Students with more than 1.0 credit deficiency are not permitted to register in core courses in the next program year.

Core course deficiencies may not be carried for two program years except with the written permission of the CSPA.

A Design Studio course that has been graded lower than *C-* must be repeated unless a discretionary decision for promotion has been granted. Students will not advance to the next higher program year until the Design Studio course has been successfully completed; however, students may register in non-studio courses in the next-higher program year. Students may repeat a studio course only once; failure to obtain the required grade will result in students being required to withdraw from the program.

### Withdrawal from the Program

Students who have successfully repeated a studio course, but who receive a grade lower than *C-* in a subsequent studio course, will be required to withdraw from the program.

Students who have been required to withdraw from the program must wait for at least one academic year before applying for readmission to the program. If readmitted, such students will be placed on probation.



## Probation

Students must maintain a cumulative GPA of 3.5 or better in non-studio courses to remain in good standing. In order to be eligible for promotion to the next higher program year, students must also obtain a grade of C- or better in each studio or have received a discretionary promotion.

Students whose GPA in non-studio courses falls below 3.5 may proceed to the next higher program year on probation. Students have a maximum of one academic year to clear probation.

In order to return to regular status, students on probation must repeat and pass each failed course (except for electives, where a substitute course may be taken) and must, during the next academic year, raise their cumulative GPA in non-studio courses to 3.5 or better. If the required GPA is not achieved, the student will be required to withdraw from the program.

Students may repeat a failed course only once for the purpose of clearing probation.

Students who have cleared probation in the past, but whose grades in the subsequent year would lead to a second probation will be required to withdraw from the program.

Students who have been placed on probation, and who have either previously received or subsequently receive a grade lower than C- in a studio course will be required to withdraw from the program.

Students who have been required to withdraw from the program must spend at least one academic year away from the program before applying for readmission. If readmitted, the student will return on probation.

## Examinations

General regulations on examinations are on p. 49.

## Review of Grades

Students are entitled to a review of a final grade. Those wishing to receive such a review should enquire at the Registrarial Services office for the Faculty of Engineering and Design, after which they may wish to make a formal application for this review. Applications must be filed with the Registrarial Services office for the Faculty of Engineering and Design according to the application deadlines for each term. (See p. 12.)

Requests for review of grades in Architecture courses are dealt with by the Director of the School of Architecture. Students will be invited to submit to the Director a written statement presenting the grounds for the Review and their work from the course. This must be received in the Director's Office no later than: February 15th for the Fall term; July 15th for the Winter term; and October 15th for the Summer session. The instructor(s) who awarded the grade will present the rationale for the grade awarded. A Review of Grade Committee will be established by the Director, comprised of faculty from the School who are not directly involved with the grade under review. The Committee shall make recommendations to the Director, with respect to the grading. Changes in grade shall be at the discretion of the Director.

The Review of Grade Committee will be established after the deadline for applications has expired.

## Evaluation

To gain standing in a course, a student must meet the course requirements for attendance, term work and examinations. (See p. 49.)

Instructors will inform their classes in writing, before the last date for course changes, of the elements that will contribute to the final grade and their weighting, including attendance, class participation, essays, tests and final examinations.

## Retention of Work

Keeping a good portfolio is a most important part of architectural education. A portfolio represents a record of the student's progress and design experience over the years. It is an indispensable requirement for any job application in the future. A portfolio is started in First year and continues to expand until graduation. The School, therefore, requires that each student produce reductions (normally 8 1/2 x 11 inch reproductions, colour or black and white and/or slides) of their work at the end of each term. One copy of the work should be put in the student's portfolio and the other turned in to the instructor for retention in the School's archives. (This facilitates retrospective exhibitions of work, accreditation, publications and any future references for pedagogic purposes.) Original work is the property of the students, but the School retains the right to keep work of merit for up to two years after the date of submission. The School will make every effort to preserve the work in good condition, and will give authorship credit and take care of its proper use.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations. (See p. 49.) To meet Section I of the School's regulations, a student must have passed the approved pattern of courses and achieved the minimum grade requirements for the Studio program and a GPA of 3.5 or better in non-studio courses.

Students wishing to continue into the professional M.Arch. degree program must have successfully completed the B.A.S. degree program with a GPA of 7.0 or better.

## Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the Divisional Registrar's office by February 1; those expecting to graduate in the Fall by September 1; and those expecting to graduate in February, by December 1.

## Degrees with Distinction

Upon recommendation of the School, the notation "With High Distinction" may be made on the academic records of candidates for the degree of Bachelor of Architectural Studies. To be considered for this recommendation, candidates must obtain an overall GPA of 10.0 or better.

Upon recommendation of the School, the notation "With Distinction" may be made on the academic records of candidates for the degree of Bachelor of Architectural Studies. To be considered for this recommendation, candidates must obtain an overall GPA of 9.0 or better.

For transfer students, degrees "With Distinction" and "With High Distinction" will be awarded at the discretion of the Faculty Board.

## Scholarships and Awards

The faculty of the School will recommend students to the Senate for scholarships and awards available to the School. For this purpose an overall GPA including the design studio courses will be calculated. The design studio grade, the course GPA or the overall GPA will be used as is most appropriate for the nature of the award.

Special prizes are also given to acknowledge distinguished work.

Students admitted with advanced standing whose GPA may not represent a true measure of their worth will be given individual consideration.

See Awards and Financial Assistance, p. 24.



## Course Requirements

### Core Courses

#### 1. Design Studios

The heart of the architectural program is the design studio. Design projects are the primary learning vehicle, supported by lectures, seminars, and tutorials. The most valuable aspect of the Studio program is its emphasis on creative architectural thinking driven by conditions and by issues embedded in the life experiences of individuals. Individual sensibilities, however, must be integrated with site and environmental conditions, human factors, building technologies, the architect's professional obligations to society, and with the conventions of architectural practice. The essence of the design studio is the resolution of these often conflicting demands.

Design Studio courses are 1.0 credit in the First year and 1.5 credits per term in the Second, Third and Fourth years. Design Studio courses are taught through lectures, seminars, and individual tutorial instruction. They require more individual work than is indicated by the scheduled contact time. Enrolment is restricted to students admitted to the Architecture program.

Studio Critiques are indispensable, and integral to nearly all architectural programs. Critiques are the form in which discussions of architecture become concrete and specific, around work actually completed. They provide an opportunity for students to explain intentions and to judge intentions against the interpretations of guests, faculty, and other students.

#### Summer Studio

A Design Studio course may be offered during the summer session. This studio is available to full-time students registered in the B.A.S. degree program. It is not available to First-year students seeking Second-year credit. Summer Studio may not be audited.

#### 2. Core Courses

Core courses are the mandatory part of the program, providing the required academic and professional foundation for studies in architecture. While more extensive in the lower years, they extend across the entire program and are as designated in the course charts, p. 130 and in the description of courses offered, p. 132. Enrolment in core courses may be limited by constraints of space and other resources. When necessary, preference will be given to students registering in the Architecture program and the Architecture/Art History combined program.

**Note:** Prerequisites to core courses may not be waived except on appeal to the CSPA and with special permission of the Faculty Board.

#### 3. Elective Courses

Elective courses fall under two categories: "Free Electives" (which may be chosen from among courses offered for credit within degree programs in the University, including undesignated elective offerings in the School), and "Designated Electives" (chosen from among designated offerings in the School). Designated electives fall into two categories: Workshops and Theory/History Electives.

To satisfy Free Elective requirements in the Bachelor of Architectural Studies program, the School will recognize any successfully-completed university-level course considered acceptable by Carleton University. Free Electives are noted as "electives" in the charts on page .

#### Designated Electives

##### 1. Workshops

Workshop courses are offered through the School of Architecture. They are scheduled for six hours a week, divided between seminars and individual work, including tutoring. Workshop enrolments are limited. Students may take up to 1.0 credit of Workshops in their Third and Fourth years.

##### 2. Theory/History Electives

Theory/History Electives are offered through the School of Architecture. They are intended to develop a broad, historical understanding of theoretical issues and debates in the making of architecture. A minimum of 1.5 credits of Theory/History Electives are required.

In addition to the Theory/History electives included among the Architecture course offerings, the following courses will be accepted:

#### Art History

11.302★ Canadian Architecture

11.305★ American Architecture

11.369★ Modern Architecture: The Twentieth Century

11.480★ Topics in Architectural History

A minimum of three Theory/History Electives are required.

### Course Program

The program of study is outlined in the following charts and detailed course descriptions appear on p. 130, and listed under "Courses and Workshops." (See p. 132.)

All programs are subject to change according to the final availability of resources at the time of registration.

### Student Initiated Study Abroad

Applications for Student Initiated Study Abroad programs (which include studio courses) will be considered for credit on a case by case basis by the CSPA. Students must present full, comprehensive, and detailed information (in English) for the courses and program proposed. The deadline for applications is February 1. In order to be eligible to take design studio courses students must have completed the previous program year with clear standing and have achieved a cumulative GPA of 7.0 or better in all studio courses previously taken at Carleton. Students wishing to study abroad in their Fourth year should participate in the School's Directed Studies Abroad programs. Students who are accepted into Student Initiated Studies Abroad programs must obtain a letter of permission from the CSPA before registering at the host institution.

### Directed Studies Abroad

When circumstances allow, the School will undertake a Directed Studies Abroad option for groups of 15 or more students who are enrolled in the Fall term of the Fourth or Fifth year of the program. The School may support the proposal for a Directed Studies Abroad program, but if the participation list falls to a group of fewer than 12 students, the School will cancel the program. Notification of such program cancellation will be made as soon as possible after the decision has been taken.

This study takes place in a location away from Ottawa and usually outside Canada. The location is selected for its architectural and urban relevance, and is carried out under the direction of a faculty member of the School.

The Directed Studies Abroad option is available to students with clear standing to the Fourth year of the program and permission of the School. Academic standing will be determined on the basis of the grades achieved by the end of the examination period of the Winter term of Third year. Participation lists, including wait lists, for all Directed Study Abroad programs will be determined according to the standing that students have achieved at that date, irrespective of work, they may choose to undertake over the Summer session. Those who achieve clear standing after the Winter term deadline will be accommodated, with the permission of the School, where space is available.



## Independent Study

A student enrolled in the Bachelor of Architectural Studies program may propose, and may be permitted to undertake, an independent study in lieu of an elective or workshop elective course for a total of 0.5 credit.

The purpose of this provision is to allow more flexibility for students to pursue a line of investigation in their own way, free of normal constraints of timetable and University locale. The independent study at the undergraduate level is to make no demands on University faculty other than those required for approval and evaluation.

In certain cases, with the approval of the department in which they are registered, students enrolled in another program at the University may be permitted to enrol in an independent study course under the direction of a member of the faculty of the School. The procedures and conditions will be detailed and approved jointly by the student, the department and the assessor in the school.

Serious scholarship and research are expected and proper documentation will be required. In the case of students in Architecture, registration for the study will be subject to the following conditions:

1. The student must not be on probation and must have no deficiencies in core courses from an earlier year.
2. The student will register for an independent study course in the term or session during which the work is to be completed. The student must submit the proposal in writing to the assessor prior to registration, outlining the objectives and direction of the study, the time and locale, resources available, submission date and other pertinent information.

3. The student must have obtained the prior agreement of a member of the teaching staff to act as assessor for the study. The student must also obtain the Director's approval of the proposal prior to registering in the course. The staff member will be responsible for evaluation. The student's assessor will deliver the completed and approved proposal to the Records office of the School of Architecture to be filed with the student's course records.

## General Information

### Materials, Supplies and Field Trips

The program in Architecture, particularly the design studio courses, requires that the student produce large quantities of drawings and models, as well as ozalid prints and photostats, and requires use of other photographic media, reproductions of drawings, reports, etc., all of which can be costly.

Equipment for drawing, photography, etc. should be regarded as an investment, because good tools are essential and last a long

time if properly cared for. An equipment list is provided as a guide to the entering student. A good quality 35mm. camera is a very useful but not mandatory item on the list and most students find they use it to such an extent that they wish to purchase one during the first year or two of the program.

Field trips to other cities are frequently a part of the program. While these field trips are intended to enhance the area of study, all trips are voluntary and are not considered to be mandatory to meet the requirements of the area of study.

Experience indicates that the student should budget about \$1,500 for materials, equipment and field trips per year, not including a camera.

## B.A.S. Program

First Year	Fall Term	Winter Term	
11.110★ 0.5 credit	Western Art: Prehist to Medieval Elective	11.111★ 0.5 credit	West Art: Ren to Pres Elective
76.100★	Introduction to Architecture	82.105★	Intro to Technology
85.216★	Introduction to Multimedia	80.115	Studio 1
80.105★	Drawing		

**Note:** Architecture 80.115 has a course value of 1.0 credit.

Second Year	Fall Term	Winter Term	
79.215★ 77.222★	Computer Modeling & Form Anal Architectural Technology 1	76.230★ 77.223★	Intro. to Modern Arch Architectural Tech 2
80.215	Studio 2	80.216	Studio 3

**Note:** Architecture 80.215 and 80.216 each have a course value of 1.5 credits.

Third Year	Fall Term	Winter Term	
0.5 credit 77.322★	Theory/History Elective Architectural Technology 3	0.5 credit 0.5 credit	Theory/History Elective Workshop or Elective
80.315	Studio 4	80.316	Studio 5

**Note:** Architecture 80.315 and 80.316 each have a course value of 1.5 credits.

Fourth Year	Fall Term	Winter Term	
0.5 credit 0.5 credit	Elective Workshop or Elective	0.5 credit 77.450★	Theory/History Elective Design Economics
80.415	Studio 6 (Possible DSA 1st semester)	80.416	Studio 7

**Note:** Architecture 80.415 and 80.416 each have a course value of 1.5 credits.

### B.Arch. Program

The First year program of the B.Arch. degree has been phased out. The B.Arch. program will be replaced by the B.A.S. program (see above).

Second Year	Fall Term	Winter Term	
76.220★	Neoclassical Architecture and Nineteenth Century Architecture	76.221★	Twentieth Century Architecture
77.221★	Construction Methods and Materials	77.231★	Architectural Detailing for Construction
76.203★	Fundamentals of Architectural Vocabulary	77.213★	Structural Analysis in Architecture
80.211	Design Studio 2A	80.212	Design Studio 2B

**Notes:** 1. Architecture 80.211 and 80.212 each have a course value of 1.5 credits.  
2. 77.221★ now replaces 77.131★ and 77.130★; 77.231★ now replaces 77.230★.

Third Year	Fall Term	Winter Term	
76.410★	Physical Morphology of the City	77.301★	Light and Acoustics in Architecture
77.313★	Structural Design in Architecture	0.5 credit	Elective
0.5 credit	Workshop	0.5 credit	Workshop or Elective
80.304	Design Studio 3A	80.306	Design Studio 3B

**Notes:** 1. Architecture 80.304 and 80.306 each have a course value of 1.5 credits.  
2. 77.301★ now replaces 77.206★ and 77.205★.

Fourth Year	Fall Term	Winter Term	
0.5 credit 0.5 credit 0.5 credit	Elective Elective Workshop	76.452★ 0.5 credit 0.5 credit	Architectural Research and Criticism Elective Workshop
80.403	Design Studio 4A	80.405	Design Studio 4B

**Note:** 1. Architecture 80.403 and 80.405 each have a course value of 1.5 credits.

Fifth Year	Fall Term	Winter Term	
77.450★	Design Economics	78.420★	Professional Practice
One of: 80.440	Studio 5A and 1.0 credit Elective or 0.5 credit Elective and 0.5 credit Workshop	One of: 80.458 80.461 80.467	Studio 5B: Student Initiated Projects Research Thesis 2 Design Thesis 2
80.460 80.466 80.470	Research Thesis 1 Design Thesis 1 Selected Topics Studio		

**Notes:** 1. Architecture 80.440 has a course value of 1.5 credits. Architecture 80.458, 80.460, 80.461, 80.466, 80.467, 80.470 each have a course value of 2.5 credits.  
2. Students who have already taken Architecture 77.350 will take an approved elective as a substitute.



## Courses and Workshops

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule booklet* published in the summer.

### Theory/History

Architecture 76.100★

#### Introduction to Architecture

Architecture in the matrix of human conditions: linkages among architecture, fine arts, humanities, social sciences, physical sciences, mathematics and philosophy. Architectural ideas will be introduced through a discussion of cities, buildings and landscapes. (Core Course)

Lectures three hours a week.

First offered 1998-1999

Architecture 76.105★

#### Architectural Thought and Contemporary Society

The relationship of architecture, architectural thought and the architectural profession to the societies in which they exist (and which they must serve). Topics are selected to emphasize key issues. (Elective Course)

Lectures and seminars, three hours a week.

Architecture 76.203★

#### The Fundamentals of Architectural Vocabulary

Architectural ideas, language and meaning, are considered in relation to broad conceptual frameworks — contrasting various theoretical and formal approaches. Architectural language is considered in terms of the elements, relationships, and ordering ideas within and between buildings. (Core Course)

Lectures three hours a week.

Last offered 1998-99.

Architecture 76.206★

#### Introduction to Industrial Design

An overview of the theoretical background of industrial design, consisting of such topics as: the definitions and dimensions of design and industrial design, its nature and its historical evolution; the notion of quality; quality aspects in man-made objects; formal qualities as determinants for categories of design; design methods; design management in industry; professional practice of industrial design and industrial design promotion, nationally and internationally. Practising industrial designers are invited to present case studies of their activities. (Elective Course) (Also listed as Industrial Design 85.100★.)

Lectures three hours a week.

Architecture 76.211★

#### Industrial Design Analysis

The various problems involved in industrial design are analyzed. Among others: the relationship with principal techniques and mass-production technology; problems of uniformity and variety, specialty and versatility in production; problems of tolerances; the role of ergonomics and anthropometrics in design; industrial design and environment; speculations about future industrial design approaches with regard to pollution and conservation of resources; adaptation of value-analyses to the field of industrial design. (Elective Course) (Also listed as Industrial Design 85.101★.)

Prerequisite: Architecture 76.206★ or Industrial Design 85.100★.

Lectures three hours a week.

Architecture 76.220★

#### NeoClassical and Nineteenth Century Architecture

Eighteenth and Nineteenth Century architecture in Western Europe within the cultural and philosophical framework of rising modernity. Classicism, rationalist ideology in design, the demands of new building types, urban conditions, and technical possibilities. (Core Course for B. Arch. students only)

Precludes additional credit for Architecture 76.121★.

Prerequisites: Architecture 76.106★ and 76.110★ or permission of the School.

Lectures three hours a week.

Last offered 1998-99.

Architecture 76.221★

#### Twentieth Century Architecture

The evolution of Modern architecture across various movements in Europe and North America. Literature, the visual arts, and film are examined in relation to movements that precipitated main-stream International Style — and contributed to its transformation in the era of postmodernism. (Core Course for B. Arch. students only) (Also listed as Art History 11.369★.)

Precludes additional credit for Architecture 76.121★.

Prerequisite: Architecture 76.220★ or permission of the School.

Lectures three hours a week.

Last offered 1998-99.

Architecture 76.230★

#### Introduction to Modern Architecture

Architectural and urban ideals of modernism with special emphasis upon the development of the avant-garde in the early twentieth century. The phenomenon of modern architecture within the broader framework of the development of western thought. (Core Course)

Precludes additional credit for Architecture 76.309★.

Prerequisites: Art History 11.110★ and 11.111★; or permission of the School.

Lectures three hours a week.

First offered 1999-2000.

Architecture 76.328★

#### The Architecture of Urban Space

Design explorations that are directed towards the search for aesthetic form and meaning in urban space, with particular application to the Canadian context. Project-oriented. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

Architecture 76.392★

#### Selected Topics: Workshops in Theory and History of Architecture

Workshop focuses on one specific aspect of architecture in the area of theory and history. Workshop offerings change from year to year. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

Architecture 76.402★

#### History of Canadian Architecture

Canadian architecture from the seventeenth century to the present day, covering both stylistic and technological developments. Building styles, methods, and materials in the context of social and economic conditions and construction techniques.

(Theory/History Elective) (Also listed as Art History 11.302★)

Precludes additional credit for Architecture 76.302★.

Prerequisite: Architecture 76.230★ or permission of the School.

Lectures, seminars three hours a week.

Architecture 76.404★

#### History of Architectural Theory

An exploration of architectural intentions in the early period of Western history, with special emphasis on Renaissance treatises and ideas. Architectural intentions in relation to shifting world-views, as a basis of historical interpretation. (Theory/History Elective)

Precludes additional credit for Architecture 76.307★.

Prerequisite: Architecture 76.230★ or permission of the School.

Lectures three hours a week.

Architecture 76.406★

#### Origins of Modern Architecture

Exploration of architectural theories with special emphasis on the European context from the seventeenth century to the late nineteenth century. (Theory/History Elective)

Precludes additional credit for Architecture 76.308★.

Prerequisite: Architecture 76.230★ or permission of the School.

Lectures three hours a week.

Architecture 76.408★

#### Foundations of Modernism in Architecture

Major critical perspectives as applied to architecture as a fine art. The debate between classicism and romanticism with



consideration of its cultural roots. (Theory/History Elective)  
Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.409★

##### **History and Theory of the Avant-Garde**

Exploration of architectural theories with special emphasis on the development of the Avant-Garde in the early twentieth century, looking at the Avant-Garde within the larger framework of modernism. (Theory/History Elective)

Precludes additional credit for Architecture 76.309★.

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.410★

##### **The Physical Morphology of the City**

Description and comparative analysis of the physical morphology of cities. Primary structural, spatial and formal organization and elements that characterize the morphology of cities studied in terms of their historical and contemporary significance for architecture and urban design. (Core Course for B. Arch. students)

Precludes additional credit for Architecture 76.204★ and 76.310★.

Prerequisite: Architecture 76.106★, 76.110★ (11.120★), 76.220★ (11.121★) or permission of the School.

Lectures three hours a week.

Last offered 1999-2000.

#### Architecture 76.415★

##### **Theories of Landscape Design**

Introduction to landscape architecture as the organization of outdoor space. Historical, cultural, economic and political factors as a basis for interpreting spatial organization in urban and rural areas of human settlement. Emphasis on the period from the fifteenth to the nineteenth century. (Theory/History Elective)

Precludes additional credit for Architecture 76.315★.

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.423★

##### **Society and Shelter**

Buildings and shelter as human and social products; the impact of built form on social behaviour and thought; the perception of the built environment and the design and construction of buildings as social processes. (Theory/History Elective) (Also listed as Sociology 53.339★.)

Prerequisite: Architecture 76.230★ or permission of the School.

Lectures three hours, seminars three hours a week.

#### Architecture 76.424★

##### **Studies in the Design Professions**

Architecture and design professions in relation to traditional professions and to occupations in art and design. Professions in the development of culture and society; education, career and work; knowledge in the design professions; and the nature of design practice. (Elective Course) (Also listed as Sociology 53.424★)

Prerequisite: Third-year standing in the B.A.S. program; Fourth-year standing in Sociology; Fourth-year standing in the B.A. (Honours) Architecture/Art History program; or permission of the School.

Seminar three hours a week.

#### Architecture 76.425★

##### **Workshop: User Analysis and Building Performance**

Projects to develop skills in the analysis of building performance. Examination of occupancy analysis, safety and risk assessment, post-occupancy evaluation, and social impact assessment. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

#### Architecture 76.430★

##### **Neo-Classical and Nineteenth-Century Architecture**

Eighteenth and nineteenth-century architecture and urban form in Western Europe. Emphasis on the cultural and philosophical framework of rising modernity to illuminate architectural production and theory as well as the development of urban form. (Theory/History Elective)

Precludes additional credit for Architecture 76.121★ and 76.220★.

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.431★

##### **Architecture in the Post-War Period**

Architectural thought and practice in the post-avant-garde period in Western Europe and America in light of the development of the modern metropolis and its suburb. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.432★

##### **Ancient and Pre-Columbian Architecture**

Monumental temples of the ancient Mesoamericans are compared with other world traditions at similar levels of cultural development. Selected examples considered in terms of morphology, technology, iconography, social/political context, world view and general architectural theory. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.433★

##### **Greek Architecture**

Architecture of Greek antiquity and its relationship to its philosophical, artistic, and mythical contexts. The development of the idea of the city; the presence of architecture within its symbolic landscape. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.434★

##### **The Architecture of Rome**

Rome in its classical to late-antique periods. Its founding mythologies and landscape. In-depth analysis of Rome, with special attention to its public buildings. Early Christian architecture within the Roman context. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.435★

##### **Medieval Architecture**

Gothic architecture, and its relation to its philosophic and artistic predecessors. Special attention to the coexistence of the monastic tradition, late romanesque building, and new experiments in gothic during this period, marked by intellectual and political ferment. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.436★

##### **Renaissance Architectural Theory**

The rise of architectural theory within the context of the Italian Renaissance. Canonic texts explored and compared in the context of the architectural developments of the period. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.437★

##### **Architecture of the Muslim Cultures**

Historical and theoretical discussions about the architecture of Muslim cultures. Selected sites and monuments from eighth to eighteenth century, covering the vast geography from North Africa to South-east Asia. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.

#### Architecture 76.438★

##### **Asian Architecture**

Anthropological history of the architecture of the Near- and Far-East. The architecture and urban form of Ancient Egypt, Anatolia, Sumer and Persia. The architecture and cities of Ancient China and India. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.  
Lectures three hours a week.



**Architecture 76.439★**

**Mesoamerican Architecture**

Selected works of Mesoamerican architecture in terms of iconography, morphology, technology, function, historical development, and concept. Mesoamerican architectural features compared with other world traditions. Emphasis on design. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School. Lectures three hours a week.

**Architecture 76.440★**

**Directed Studies Abroad: Theory**

A survey of the architectural and urban history of a specific culture. These discussions address the present reality of a country, region or city being visited by the Fourth year of the program. (Elective Course)

Prerequisite: Clear standing to Fourth year and permission of the School.

Lectures three hours a week.

**Architecture 76.452★**

**Architectural Research and Criticism**

Preparation for the independent research and design work. Work related to the nature of research and criticism in architecture, with an emphasis on issues of current concern. (Core Course for B. Arch. students)

Lectures and seminars three hours a week.

Last offered 2000-2001.

**Architecture 76.455★**

**Seminar in Theory and History**

History and theory of architecture. Topics will vary from year to year. Limited enrolment. (Elective Course)

Prerequisite: Fourth-year standing in the B.A.S. or B.A. (Honours) Architecture/Art History programs, or permission of the School.

Lectures three hours a week.

**Architecture 76.481★**

**Selected Topics: Studies in Theory and History of Architecture**

An aspect of architecture in the area of theory and history. Topics vary from year to year. (Theory/History Elective)

Prerequisite: Architecture 76.230★ or permission of the School.

Lectures three hours a week.

**Architecture 76.488★**

**Independent Study**

(Elective Course)

## Technical

**Architecture 77.135★**

**The Nature and Behaviour of Materials**

An introduction to organizational patterns, forms, and properties of materials such as cohesion, elasticity, strain energy, work of fracture, crack stopping, and the general theory of strength; a survey of the metallic and non-metallic traditions, plastics, composites, and materials of the future. (Elective Course)

Lectures three hours a week.

**Architecture 77.201★**

**Structures in Architecture**

A survey to structural planning, including a historical survey of structural systems, details and the study of the factors involved in the synthesis of a suitable structural scheme. The course is intended as a survey of the science and the structural properties of materials. (Elective Course)

Precludes additional credit for Architecture 77.113★.

Lectures three hours a week, laboratory is block scheduled.

**Architecture 77.213★**

**Structural Analysis in Architecture**

Statics and strength of materials. Mechanical properties of structural materials. Application of statics and strength of materials to problems of structural elements in the context of total building structures. (Core Course for B.Arch. students)

Lectures three hours a week, laboratory three hours a week.

Last offered 1998-99.

**Architecture 77.221★**

**Construction Methods and Materials**

Wood frame, post and beam and load-bearing masonry construction. Implications of the structural system on building envelope, mechanical and electrical systems. Architectural detailing. (Core Course for B.Arch. students)

Precludes additional credit for Architecture 77.130★ and 77.131★.

Prerequisite: Architecture 77.101★.

Lectures three hours a week.

Last offered in 1998-99.

**Architecture 77.222★**

**Architectural Technology 1**

Case studies of vernacular buildings from different climatic regions: issues of human comfort, construction, and materials. Site orientation, foundations, structure and envelope in terms of their response to local climate: sun (light and heat), wind, moisture. (Core Course)

Prerequisite: Civil Engineering 82.105★ or permission of the School.

Lectures three hours a week.

First offered 1999-2000.

**Architecture 77.223★**

**Architectural Technology 2**

Wood frame, post and beam and load bearing masonry construction. Implications of the structural system on building envelope, mechanical and electrical systems are explored. Emphasis on architectural detailing. (Core Course)

Prerequisite: Architecture 77.222★ or permission of the School.

Lectures three hours a week.

First offered 1999-2000.

**Architecture 77.231★**

**Architectural Detailing for Construction**

Small to medium-scale steel and concrete structured buildings are used to explore different approaches to building envelope (curtain wall, rain screen wall, etc.), HVAC and lighting systems (exposed, concealed), interior planning (room acoustics, acoustic isolation, fire protection, finish materials etc.). (Core Course for B.Arch. students)

Precludes additional credit for Architecture 77.230★.

Prerequisite: Architecture 77.221★ or permission of the School.

Lectures three hours a week.

Last offered 1998-99.

**Architecture 77.301★**

**Lighting/Acoustics in Architecture**

Natural and artificial light, its sources and behaviour, visual perception, and impact design. Sound and the control of the sonic environment, including radiation, propagation, absorption, reflection, and noise control in building structures and spaces. (Core Course for B. Arch. students)

Precludes additional credit for Architecture 77.205★ and 77.206★.

Prerequisite: Architecture 77.221★ or permission of the School.

Lectures three hours a week.

Last offered 1999-2000.

**Architecture 77.304★**

**Workshop: Energy and Form**

Relationship between environmental factors, energy and architectural form. Explorations into ways in which buildings and building elements can be planned and designed to take advantage of natural cycles in order to minimize the need for supportive energy inputs. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

**Architecture 77.313★**

**Structural Design in Architecture**

Behaviour of structural elements and simple systems under load conditions of increasing severity. Simplified design of structural elements and systems. Comparative estimation of stresses and



deformations. Use of structural testing laboratory. (Core Course for B.Arch. students)

Prerequisites: Architecture 77.101★ and 77.213★.

Lectures three hours a week, laboratory one hour a week.

Last offered 1999-2000.

#### Architecture 77.314★

##### **Matrix Analysis of Framed Structures**

Review of basic structural concepts. Betti's law and applications. Matrix flexibility method; flexibility influence coefficients. Development of stiffness influence coefficients. Stiffness method of analysis; beams; plane trusses and frames; space trusses and frames. Introduction to the finite element method. (Elective course) (Also listed as Engineering 82.420★).

Prerequisite: Engineering 82.323★.

Lectures three hours a week, problem analysis three hours alternate weeks.

#### Architecture 77.316★

##### **Design of Structural Steel Components**

Introduction to CAN/CSA-S16.1, design and behaviour concepts; shear lag, block shear, local plate buckling, lateral torsional buckling, instantaneous centre, inelastic strength and stability. Design of tension members, axially loaded columns, beams, beam-columns, simple bolted and welded connections. (Elective Course) (Also listed as Engineering 82.325★).

Prerequisites: Engineering 82.220★ and 82.324★.

Lectures three hours a week, problem analysis three hours alternate weeks.

#### Architecture 77.322★

##### **Architectural Technology 3**

Small to medium-scale steel and concrete structured buildings as case studies to explore different approaches to building envelope (curtain wall, rain screen wall, etc.), HVAC and lighting systems (exposed, concealed), interior planning (room acoustics, acoustic isolation, fire protection, finish materials etc.). (Core Course)

Prerequisite: Architecture 77.222★ or permission of the School.

Lectures three hours a week.

First offered 2000-2001.

#### Architecture 77.335★

##### **Workshop: Materials Application**

Application of building materials, including the forming of building parts and the design of joints for performance and assembly. Practical constructions using new technology are emphasized. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

#### Architecture 77.392★

##### **Selected Topics: Workshop in Architectural Technology**

A specific aspect of architecture in the area of architectural technology. Offerings vary from year to year. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

#### Architecture 77.406★

##### **Mechanical and Electrical Services in Buildings**

Human comfort, psychometrics, and a full range of building servicing systems including heating, ventilating, air-conditioning, plumbing, electrical systems, fire safety, vertical transport, energy conservation, recycling, site services, and the use of solar assisted systems for space/water heating and cooling. (Core Course for B.Arch. students)

Precludes additional credit for Architecture 77.305★ and 77.306★.

Prerequisite: Architecture 77.206★ or 77.301★; or permission of the School.

Lectures three hours a week.

Last offered 2000-2001.

#### Architecture 77.410★

##### **Lighting for Architecture**

A study of daylighting and electric lighting design techniques. Emphasis will be placed on day-lighting models and computer light-modelling software as tools to explore lighting design. (Elective Course)

Precludes additional credit for Architecture 77.300★.

Prerequisite: Architecture 77.223★ or permission of the School.

Lectures three hours a week.

#### Architecture 77.412★

##### **Acoustics in Architecture**

Sound in enclosures, including interior design of auditoria and special applications. Sound reproduction and reinforcement systems. Acoustic privacy and protection, sound control in buildings, materials for noise control, community noise, industrial noise. Acoustic measurements and instrumentation. (Elective Course)

Precludes additional credit for Architecture 77.302★.

Lectures two hours, laboratory two hours a week.

#### Architecture 77.413★

##### **Energy and Form**

Energy as a criterion in decision-making for architectural design. Conventional energy resources and state-of-the-art alternative energy resource systems with respect to building shape, size, materials, openings, orientation, siting, and use. (Elective Course)

Precludes additional credit for Architecture 77.303★.

Lectures three hours a week.

#### Architecture 77.420★

##### **Structural Morphology**

Concepts and models bridging geometric morphology and architecture. Hierarchies of dimensional spaces. Planar and spatial orders. Form aggregation and space subdivision within the laws of

geometric compatibility and formal rigidity. Size, similitude and isomorphism. (Elective Course)

Lectures three hours a week.

#### Architecture 77.422★

##### **Wood Engineering**

Introduction to structural design in timber. Properties, anatomy of wood, wood products, factors affecting strength and behaviour, strength evaluation and testing. Design of columns, beams and beam-columns. Design of trusses, frames, glulam structures, plywood components, formwork, foundations, connections and connectors. Inspection, maintenance and repair. (Elective Course) (Also listed as Engineering 82.422★)

Prerequisite: Fourth-year registration or permission of the School.

Lectures three hours a week, problem analysis three hours alternate weeks.

#### Architecture 77.428★

##### **Workshop: Structure and Form**

Study of structural nature of non-conventional space enclosure systems like cable structures, membranes, shells, submerged structures, excavated structural forms and lunar structures. (Workshop)

Prerequisite: Architecture 77.420★ or permission of the School.

Lecture, seminar, lab or field work six hours a week.

#### Architecture 77.430★

##### **Performance of Building Materials**

Materials available for building, with emphasis on their structure, properties, application and sustained performance over the life of a building. (Elective Course)

Precludes additional credit for Architecture 77.330★.

Laboratories, lectures, field trips four hours a week.

#### Architecture 77.440★

##### **Design for Construction**

Design in relation to materials and building construction including the effects of building codes, zoning bylaws, approvals, processes and legislation, the organization of the building industry, and cost estimating control. (Elective Course)

Prerequisite: Architecture 77.330★ or permission of the School.

Lectures, seminars, field work three hours a week.

#### Architecture 77.450★

##### **Design Economics**

Principles of building economics. Determinants of building costs and their prediction. Uncertainty and investment economics. Systems and techniques of creative cost control for buildings during schematic design, design development, construction document preparation and construction. Economic evaluation during all



phases of design process. (Core Course)  
 Precludes additional credit for Architecture 77.350★.  
 Prerequisite: Fifth-year standing or permission of the School.  
 Three hours a week.

Architecture 77.481★

**Selected Topics: Studies in Architectural Technology**

A specific aspect of architecture in the area of architectural technology. Topics vary from year to year. (Elective Course)  
 Prerequisite: Permission of the School.

Architecture 77.488★

**Independent Study**  
 (Elective Course)

## Urban

Architecture 78.323★

**Workshop: Landscape Architecture**

Practical significance of landscape elements as they relate to built-form by integrating structure and site. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 78.345★

**Workshop: Urban Design**

Project-based workshop investigating current design attitudes and solutions affecting the physical morphology of cities. Formally sophisticated urban design projects. Various procedures and basic urban design ideas. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 78.349★

**Workshop: City Organization and Planning Processes**

Interdisciplinary investigation, analysis and synthesis of the institutions, processes, environments and demography of Canadian cities. Guest lecturers. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 78.392★

**Selected Topics: Workshop in Urban Studies**

A specific aspect of architecture in the area of urban studies. Topics vary from year to year. (Workshop) (Also listed as Business 42.481★)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 78.420★

**Introduction to Professional Practice**

The practice of architecture. Professional organization and conduct, the architect's services, business law, office organization and management, contract documents, building codes, contract management, cost control, accounting and site supervision. Guest speakers and case studies. (Core Course)  
 Precludes additional credit for Architecture 78.320★.  
 Prerequisite: Fifth-year standing or permission of the School.  
 Lectures three hours a week.

Architecture 78.440★

**City Organization and Planning Processes**

Structure, form and functioning of cities. Infra-structure, facilities and networks, ecosystems, demographic and social organization, government, quality of life, goals and perceptions, urban management, development, regulation and codes, design, planning and policy-making. (Elective Course)  
 Precludes additional credit for Architecture 78.340★.  
 Three hours a week.

Architecture 78.450★

**The Development of Human Shelter**

Background factors pertaining to housing in both industrial and Third-World countries; traditional and contemporary housing approaches; social housing; and people's right to adequate housing. Guest lecturers. (Elective Course)

Precludes additional credit for Architecture 78.350★.  
 Three hours a week.

Architecture 78.488★

**Independent Study**  
 (Elective Course)

## Techniques

Architecture 79.215★

**Computer Modelling and Form Analysis**

Computer modelling as a medium of architectural analysis, documentation, and presentation. Principles and techniques of 2D drawing and 3D modelling. Extensive practical work using appropriate applications. (Core Course)  
 Precludes additional credit for Architecture 79.111★.  
 Prerequisite: Second-year B.A.S. standing or permission of the School.  
 Lectures three hours a week.  
 First offered 1999-2000.

Architecture 79.303★

**Workshop: Theatre Production**

Design and fabrication of theatre productions, one of which is staged on campus. Visiting directors, designers, technical consultants and others. Visits to theatres and production facilities. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 79.326★

**Workshop: Computer Applications**

Application of existing software and programming techniques to various architectural problems. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 79.332★

**Workshop: The Anatomy of Architecture**

The architectural anatomy of selected contemporary buildings. Use of graphic techniques of analysis to develop an understanding of their basic compositional principles and language. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 79.333★

**Workshop: Architecture as Painting**

Analysis of architecture for its elemental, formal and narrative properties. These relationships "re-represented" through the medium of painting. Architecture as analogy to painting. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 79.340★

**Workshop: Visual Design**

Development of the capacity to visualize and communicate in several graphic media. Development of sensitivity to form, structure, space, texture and colour. May involve historical investigation. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

Architecture 79.341★

**Workshop: Photography**

Traditional and alternative techniques for image making and manipulation. Basic image formation techniques, advanced darkroom manipulations, past-darkroom imaging, and digital imaging within a theoretical overview of current photographic processes and techniques. (Workshop)  
 Prerequisite: Permission of the School.  
 Lecture, seminar, lab or field work six hours a week.

**Architecture 79.391 ★****Selected Topics: Studies in Architectural Techniques**

A specific aspect of architecture in the area of architectural techniques. Topics vary from year to year. (Elective Course)

Prerequisite: Permission of the School.

**Architecture 79.392 ★****Selected Topics: Workshop in Architectural Techniques**

A specific aspect of architecture in the area of architectural techniques and cooperative problem-solving. Topics vary from year to year. (Workshop)

Prerequisite: Permission of the School.

Lecture, seminar, lab or field work six hours a week.

**Architecture 79.412 ★****Problems in Computing**

Various types of non-numeric data, their representation within primary and secondary storage, and the manipulation of various representations. Comparative evaluation of languages for non-numeric problems. (Elective Course)

Precludes additional credit for Architecture 79.312★.

Prerequisite: Permission of the School.

Lectures two hours a week, laboratory two hours a week.

**Architecture 79.488 ★****Independent Study**

(Elective Course)

**Design Studios/Design Thesis/Research****Architecture 80.105 ★****Drawing**

Free-hand drawing as a way of observing and understanding the world. Various media and techniques introduced through a wide range of studio and outdoor exercises. (Core Course)

Prerequisite: Registration in the B.A.S. program.

Six hours a week.

First offered 1998-99.

**Architecture 80.115****Studio 1 (1.0 credit)**

Spatial and temporal experience of architecture through various drawings and modelling exercises. Observation of existing and imagination of possible architectural environments. On location at selected sites. (Core Course)

Prerequisite: Registration in the B.A.S. program.

Studio eight hours a week.

First offered 1998-99.

**Architecture 80.211****Design Studio 2A (1.5 credits)**

The application of ordering principles in architecture is considered in response to site, climate, function and materials and methods of construction. (Core Course for B.Arch. students)

Prerequisites: Architecture 80.111 and 80.112.

Studio twelve hours a week.

Last offered 1998-99.

**Architecture 80.212****Design Studio 2B (1.5 credits)**

A continuation of Architecture 80.211. Small scale projects developed in complexity during this term. (Core Course for B.Arch. students)

Prerequisites: Architecture 80.111, 80.112 and 80.211.

Studio twelve hours a week.

Last offered 1998-99.

**Architecture 80.215****Studio 2 (1.5 credits)**

Development of cultural imagination within the field of architecture. Inhabitation and spatial definition are explored through analysis and design of small-scale environments. Representational skills developed, including the conventions of architectural drawing and modelling. (Core Course)

Prerequisite: Architecture 80.115.

Studio time twelve hours a week.

First offered 1999-2000.

**Architecture 80.216****Studio 3 (1.5 credits)**

Small-scale building projects explore architectural design as a form of cultural expression. Consideration of site, program, and the materials of building as the means for shaping architecture. (Core Course)

Prerequisite: Architecture 80.215.

Studio time twelve hours a week.

First offered 1999-2000.

**Architecture 80.304****Design Studio 3A (1.5 credits)**

The principles, vocabularies and craft of architecture within the contexts of purpose, place and precedent. Small-scale building in the natural and urban landscape. (Core Course for B.Arch. students)

Prerequisites: Architecture 80.211 and 80.212.

Studio time twelve hours a week.

Last offered 1999-2000.

**Architecture 80.306****Design Studio 3B (1.5 credits)**

The continuation of the theme of Architecture 80.304 with an increase in project scope and complexity. (Core Course for B.Arch. Students)

Prerequisites: Architecture 80.211 and 80.212 and 80.304.

Studio time twelve hours a week.

Last offered 1999-2000.

**Architecture 80.315****Studio 4 (1.5 credits)**

Sensory components of architecture: their use, effect, and symbolic potential. Light and lighting, sound, the sensation of heat and cold, and related phenomena studied in modest building proposals. Social considerations of architecture. The conventions of architectural drawing. (Core Course)

Prerequisite: Architecture 80.216.

Studio time twelve hours a week.

First offered 2000-2001.

**Architecture 80.316****Studio 5 (1.5 credits)**

Building materials and practices within the context of increasingly complex building programs. Social context of architecture in relation to material expression. Modelling is stressed. (Core Course)

Prerequisite: Architecture 80.315.

Studio time twelve hours a week.

First offered 2000-2001.

**Architecture 80.403****Design Studio 4A (1.5 credits)**

The principles and vocabularies arising from the relationship between architecture and the urban context in which it is situated. (Core Course for B.Arch. students)

Prerequisites: Architecture 80.304 and 80.306.

Studio time twelve hours a week.

Last offered 2000-2001.

**Architecture 80.405****Design Studio 4B (1.5 credits)**

The principles and vocabulary of construction and technique as primary generators of architectural form. (Core Course for B.Arch. students)

Prerequisites: Architecture 80.304, 80.306 and 80.403.

Studio time twelve hours a week.

Last offered 2000-2001.

**Architecture 80.415****Studio 6 (1.5 credits)**

Issues of program and site, as the culturally defining aspects of architectural practice within complex urban and social situations, through the use of difficult sites and hybrid programs. Projects brought to a high degree of formal and graphic resolution. (Core Course)

Prerequisite: Architecture 80.316.



Studio time twelve hours a week.  
First offered 2000-2001.

Architecture 80.416

**Studio 7 (1.5 credits)**

The role of architecture in culture, stressing site and program with respect to their historic, social, and ecological implications. Synthesis of issues, methods and techniques of the undergraduate studio program. (Core Course)

Prerequisite: Architecture 80.415.

Studio time twelve hours a week.

First offered 2001-2002.

Architecture 80.440

**Design Studio 5A (1.5 credits)**

Design projects of complexity and theoretical rigour. Visiting Critic Studios may be taken. (Core Course for B.Arch. students)

Prerequisite: Fifth-year standing.

Studio time twelve hours a week.

Last offered 2001-2002.

Architecture 80.458

**Design Studio 5B (2.5 credits)**

Student-initiated design of a suitable building project; undertaken with the advice and approval of studio faculty. (Core Course for B.Arch. students)

Prerequisite: Fifth-year standing.

Studio time twenty hours a week.

Last offered 2001-2002.

Architecture 80.460

**Research Thesis 5.1 (2.5 credits)**

Opportunity for scholarly research in topics related to architecture. Thesis proposal requires approval by the Thesis Committee. The final submission must be within a prescribed format. (Core Course for B.Arch. students)

Prerequisites: Fifth-year standing and approved thesis proposal.

Last offered 2001-2002.

Architecture 80.461

**Research Thesis 5.2 (2.5 credits)**

Opportunity for scholarly research in topics related to architecture. Thesis proposal requires approval by the Thesis Committee. The final submission must be within a prescribed format. In exceptional cases the Thesis Committee may allow this to be a continuation of Architecture 80.460. (Core Course for B.Arch. students)

Prerequisites: Fifth-year standing and approved thesis proposal.

Last offered 2001-2002.

Architecture 80.466

**Design Thesis 5.1 (2.5 credits)**

Opportunity for in-depth exploration of an architectural idea or issue. The thesis proposal requires approval by the Thesis Committee. (Core Course for B.Arch. students)

Prerequisites: Fifth-year standing and approved thesis proposal.

Last offered 2001-2002.

Architecture 80.467

**Design Thesis 5.2 (2.5 credits)**

Opportunity for in-depth exploration of an architectural idea or issue. The thesis proposal requires approval by the Thesis Committee. In exceptional cases the Thesis Committee may allow this to be a continuation of Architecture 80.466. (Core Course for B.Arch. students)

Prerequisites: Fifth-year standing and approved thesis proposal.

Last offered 2001-2002.

Architecture 80.470

**Selected Topics Studio (2.5 credits)**

In-depth exploration of an architectural idea or issue, including a directed studies component, given by the studio professor, that reinforces the explorations in the studio. (Core Course for B.Arch. students.)

Prerequisites: Fifth-year standing and permission of the School.

Last offered in 2001-2002.

# Studies in Art and Culture: Art History, Film Studies, Music (Arts and Social Sciences)

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423 St. Patrick's Building  
Telephone: 520-3993

## Academic Administration

**Director, To be announced**

**Assistant Director, Art History, Roger Mesley**

**Assistant Director, Film Studies, Chris Faulkner**

**Assistant Director, Music, Bryan Gillingham**

## Teaching Staff

**Professor Emeritus**

**George Swinton** (*Art History*)

**Professors**

**P. Cardy** (*Music*) • **C.G. Faulkner** (*Film Studies*) • **G. Flinn** (*Cultural Studies*) • **B. Gillingham** (*Music*) • **A. Gillmor** (*Music*) • **E. Kellor** (*Music*) • **Z. Plek** (*Film Studies*) • **J. Shepherd** (*Music*)

**Associate Professors**

**A. Carr** (*Art History*) • **K. Crossman** (*Art History*) • **M. Langer** (*Film Studies*) • **D. le Berrurier** (*Art History*) • **N. Luckyj** (*Art History*) • **P. MacFadden** (*Film Studies*) • **G. McKnight** (*Film Studies*) • **R. Mesley** (*Art History*) • **D. Piper** (*Music*)

**Assistant Professors**

**R. Klebanoff** (*Art History*) • **A. Lolselle** (*Film Studies*) • **L.U. Marks** (*Film Studies*) • **C. O'Brien** (*Film Studies*)

**Instructor**

**J. Gilles** (*Music*)

**Adjunct Professors**

**Blaine Allen**, *Queen's University* (*Film Studies*) • **Peter Baxter**, *Queen's University* (*Film Studies*) • **Michael Bell**, *Carleton University Art Gallery* (*Art History*) • **Rosemarie Bergmann** (*Art History*) • **Ted Brasser** (*Art History*) • **Clifford Brown** (*Art History*) • **Christina Cameron**, *Canadian Parks Service* (*Art History*) • **David Gardner** (*Music*) • **Peter Harcourt** (*Film Studies*) • **Stephen Inglis**, *Canadian Museum of Civilization* (*Art History*) • **Helmut Kallmann**, *National Library of Canada* (*Music*) • **Lily Koltun**, *National Archives of Canada* (*Art History*) • **Andrea Laforet**, *Canadian Museum of Civilization* (*Art History*) • **George MacDonald**, *Canadian Museum of Civilization* (*Art History*) • **Lora Matthews** (*Music*) • **Gerald McMaster**, *Canadian Museum of Civilization* (*Art History*) • **Diana Nemiroff**, *National Gallery of Canada* (*Art History*) • **Peter Wicke**, *Direktor Forschungszentrum populäre Musik, Humboldt Universität* (*Music*)

**Sessional Lecturers**

**Roya Abouzla** (*Art History*) • **Michael Bussière** (*Music*) • **Lisette Canton** (*Music*) • **Susan Close** (*Art History*) • **Maureen Flynn-Burhoe** (*Art History*) • **Patricia Goodspeed** (*Film Studies*) • **Carol Payne** (*Art History*) • **Ann Schau** (*Music*) • **Barbara Stevenson** (*Art History*)

**Research Associates**

**Robert Barclay** (*Music*) • **Paolo Bellomia** (*Music*) • **James Burant**, *National Archives of Canada* (*Art History*) • **Clifford Ford**, *Canadian Musical Heritage Society* (*Music*) • **Anne-Marie Gaston** (*Music*) • **Eva Major-Marothy**, *National Archives of Canada* (*Art History*) • **Melissa Rombout**, *National Archives of Canada* (*Art History*) • **Patricia D. Sutherland**, *Canadian Museum of Civilization* (*Art History*) • **Judy Thompson**, *Canadian Museum of Civilization* (*Art History*) • **Carl Widstrand** (*Music*)

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## General Information

The School for Studies in Art and Culture administers the B.A. (Honours) degree in Art and Culture as well as the University's degree programs in Art History, Film Studies and Music. Details of these degree programs may be found under separate entries for Art History (p. 142), Film Studies (p. 249), and Music (p. 353).

The School, through the Office of the Director, provides advice to students wishing to submit a coherent pattern of courses on an area of the Visual and Performing Arts for a B.A. or B.A. (Honours) (Directed Interdisciplinary Studies). Details of this program may be found under separate entries for the Directed Interdisciplinary Studies (p. 213).

## B.A. (Honours) in Art and Culture

### General Information

The School for Studies in Art and Culture offers a B.A. (Honours) program in Theories of Art and Culture which draws on the School's courses in Art History, Film Studies and Music as well as on the School's interdisciplinary courses in Art and Culture. It is also possible to take courses in disciplines other than Art History, Film Studies and Music as core and optional components of the program.

The disciplines of the School share a common interest in areas such as cultural theory, Canadian art and culture, aboriginal art and culture, issues of gender, and the situation of women in art and culture. The B.A. (Honours) program in Theories of Art and Culture enables students to gain a focused, comprehensive and systematic knowledge of areas of inquiry such as critical theory, cultural theory, aesthetics, multiculturalism, post-colonialism and feminism in these areas as they are applied to the study of art and culture in both Western and non-Western societies and in all historical periods. In conjunction with their study of theory, students will be encouraged to follow a sequence of courses in at least two of Art History, Film Studies and Music.

### Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to all discipline regulations and requirements as set out below.

### B.A. (Honours) In Art and Culture:

Each prospective student *must* consult the School for advice before entering the program.

The B.A. (Honours) program requires 20.0 credits, including 10.0 credits as follows:

#### First Year

2.0 credits from First-Year Seminar 01.101, Art History 11.100, 11.120★, 11.121★, Film Studies 19.100, Music 30.101★, 30.102★.

#### Second Year

Art and Culture 08.200;  
2.0 credits from 200-level courses in at least two of Art History, Film Studies and Music.

#### Third Year

1.0 credit chosen from Art History 11.316★, Film Studies 19.301★, 19.351★, Music 30.300;  
2.0 credits chosen from the following courses:  
Art and Culture 08.395;  
any 300-level course in Art History:  
Film Studies 19.315★, 19.329★, 19.331★, 19.333, 19.342★, 19.371★, 19.381★;  
Music 30.313★, 30.314★, 30.332★, 30.342★, 30.380★;  
Sociology-Anthropology 56.383★, 56.384★, 56.385★.

#### Fourth Year

1.0 credit chosen from Art and Culture 08.400★, 08.401★, 08.402★, 08.403★;  
1.0 credit chosen from the following courses:  
Art History 11.400★, 11.404★, 11.405★, 11.435★, 11.461★, 11.480★, 11.487★, 11.499;  
Film Studies 19.400, 19.421★, 19.429★, 19.441★, 19.451★, 19.480★, 19.485★, 19.491★, 19.495;  
Music 30.430★, 30.433★, 30.473★, 30.477★, 30.480★, 30.481★, 30.498.

*Note:* It is strongly recommended that students take 1.0 credit in a language other than English.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

The School for Studies in Art and Culture offers the following courses in the study of art and culture:

First-Year Seminar in Art and Culture 01.101

### Reading Art and Culture

See course description on p. 84.

Art and Culture 08.115

### Introduction to Media and Technology in Art and Culture

This course provides students with an introduction to the technological innovations which have had significant impact on the course of twentieth-century cultural and artistic practices. This introduction is achieved through a combination of academic and practical studio work.

**Prerequisite:** Enrolment in one of the programs of the School for Studies in Art and Culture or the School of Journalism and Communication, or in the Arts Canterbury program, and permission of the School.

Lectures and studio demonstrations three hours a week.

Art and Culture 08.200

### Theories of Art and Culture

Major writings on art and culture in historical Western traditions with particular reference to the contents and concerns of the three disciplines of the School.

**Prerequisite:** Second-year standing in the Program or permission of the School.

Lecture three hours a week.

Art and Culture 08.395

### Visual and Performing Arts in the Twentieth Century

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

**Prerequisite:** Third-year standing and permission of the School.  
Lectures three hours a week.

Art and Culture 08.400★

### Topics in Cultural Studies

Selected topics in the development of cultural studies as an inter-related series of intellectual trajectories originating in England during the late 1950s. Topics may change from year to year.

**Prerequisite:** Fourth-year standing in the Program or permission of the School.

Seminar three hours a week.

Art and Culture 08.401★

### Aspects of Modernism in Art and Culture

Selected aspects of modernist theory and practice in art and culture. Topics may change from year to year and may include the arts and European colonialism; 'primitivism'; practices and theories of the avant-garde; surrealism; expressionism; art and the

popular; modernism and myth.

Prerequisite: Fourth-year standing in the Program or permission of the School.

Seminar three hours a week.

**Art and Culture 08.402★**

**Topics in Audiovisual Cultures**

Selected aspects of the audio-visual cultures of the late nineteenth and twentieth centuries.

Prerequisite: Fourth-year standing in the Program or permission of the School.

Seminar three hours a week.

**Art and Culture 08.403★**

**Cultural Theory in Canadian Contexts**

Established and contemporary theories of cultures developed within Canadian contexts.

Prerequisite: Fourth-year standing in the Program or permission

of the School.

Lectures three hours a week.

**Art and Culture 08.490★**

**Special Topic in the Study of Art and Culture**

This course is designed specifically for Honours students in the School interested in interdisciplinary aspects of their course of study. The course offerings change from year to year.

Prerequisite: Fourth-year standing in one of the School's degree programs or permission of the School.

Lectures and seminars three hours a week.

**Art and Culture 08.491★**

**Special Topic in the Study of Art and Culture**

This course is designed specifically for Honours students in the School interested in interdisciplinary aspects of their course of study. The course offerings change from year to year.

Prerequisite: Fourth-year standing in one of the School's degree programs or permission of the School.

Lectures and seminars three hours a week.



# School for Studies in Art and Culture

## Art History

### (Arts and Social Sciences)

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423 St. Patrick's Building  
Telephone: 520-2342

#### Academic Administration

<b>Director</b> , To be announced	<b>Supervisor of B.A. Programs</b> , Randi Klebanoff
<b>Assistant Director</b> , Roger Mesley	<b>Supervisor of Architecture/Art History B.A. Program</b> , K. Crossman (Fall); D. le Berrurier (Winter)
<b>Supervisor of Graduate Program</b> , Angela Carr	<b>Supervisor of Practica</b> , K. Crossman (Fall); D. le Berrurier (Winter)
<b>Supervisor of B.A. (Honours) Programs</b> , Randi Klebanoff	
<b>Supervisor of Architecture/Art History B.A. (Honours) Program</b> , K. Crossman (Fall); D. le Berrurier (Winter)	

#### Teaching Staff

**Professor Emeritus**  
**George Swinton**, B.A. (*McGill*)

#### Associate Professors

**Diane O. le Berrurier**, *Cands. H.A.A., Cands. Ph.H.S., Lics. H.A.A., Agreg. H.A.A. (Université Libre de Bruxelles), M.A., Ph.D. (Chicago)*  
• **Angela Carr**, *LL.B. (York) B.A., M.A., Phil.M., Ph.D. (Toronto)* • **Kelly J. Crossman**, *B.A. (Winnipeg), M.A. (Toronto), Ph.D. (Edinburgh)* • **Natalie Luckyj**, *B.A., M.A. (Toronto)* • **Roger J. Mesley**, *B.A., M.A., Ph.D. (Toronto)*

#### Assistant Professor

**Randi Paula Klebanoff**, *B.A. (Concordia), M.A. (British Columbia), Ph.D. (Harvard)*

#### Sessional Lecturers

**Roya Abouzla**, **Susan Close**, **Maureen Flynn-Burhoe**, **Carole Payne**

#### Adjunct Research Professors

**Michael Bell**, *Carleton University Art Gallery* • **Rosemarie Bergmann** • **Ted Brasser** • **Clifford Brown** • **Christina Cameron**, *Canadian Parks Service* • **Stephen Inglis**, *Canadian Museum of Civilization* • **Lilly Koltun**, *National Archives of Canada* • **Andrea Laforet**, *Canadian Museum of Civilization* • **George MacDonald**, *Canadian Museum of Civilization* • **Gerald McMaster**, *Canadian Museum of Civilization* • **Diana Nemiroff**, *National Gallery of Canada*

#### Research Associates

**James Burant**, *National Archives of Canada* • **Eva Major-Marothy**, *National Archives of Canada* • **Melissa Rombout**, *National Archives of Canada* • **Patricia Sutherland**, *Canadian Museum of Civilization* • **Judy Thompson**, *Canadian Museum of Civilization*

#### Slide Curator

**Barbara Stevenson**

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#### General Information

The discipline of Art History offers a wide range of courses, primarily in the history of Western art. Consequently, B.A. (Honours) and B.A. programs in Art History are flexible, and within the context of these degree programs students are encouraged to take courses in other departments and disciplines of the Faculty of Arts and Social Sciences such as Classics, Film Studies, History, Languages and Literatures, Music, Philosophy and Religion, as well as in the Faculties of Science and Public Affairs and Management.

Within the requirements for B.A. (Honours) and B.A. degrees, students are expected to take courses in the areas that form the undergraduate curriculum: Ancient, Medieval, Renaissance, Baroque and Rococo, Romantic, Modern, Contemporary, North American and Native Art. Courses in the theory of art and in art criticism are offered as adjuncts to those in art history.

A special feature of the Carleton program is an undergraduate *practicum*, in which degree students in their Third- or Fourth-year may receive up to 1.0 credit in Art History for supervised practical experience, working on specific projects in an Ottawa museum or

related setting, or on an archaeological site: for example, The National Archives of Canada, The Canadian Museum of Civilization, The National Gallery of Canada.

Courses in the Faculties of Arts and Social Sciences, Science and Public Affairs and Management provide options that complement art history and support certain specializations or career plans in art history. For example, courses in history, literature, languages and music are related, often directly, to the study of all art historical periods. Courses in film studies relate to contemporary art. Chemistry and/or studio work are especially recommended for students wishing to do post-graduate work in restoration and conservation. Certain offerings in sociology and anthropology are particularly useful for students working in the area of native art.

B.A. (Honours) and B.A. students in Art History should consider taking a studio course that acquaints them with techniques and materials that have been applied in the history of art, either through the University of Ottawa exchange agreement (see p. 47) or by means of a Letter of Permission. 1.0 credit in studio may be counted as a general option in either the B.A. (Honours) or B.A. program. Such courses must be taken in accordance with University policy and must be approved in advance by the Registrarial Services office.

Students from other departments and disciplines, part-time students and Special students may discover that courses in Art History complement their interests or their programs. Such students may enrol in any course in Art History without the stated prerequisite if permission of the discipline has been obtained. Preparatory reading is expected of all students who enrol without the stated prerequisite, and appropriate reading lists are available from the Art History Administrative Assistant throughout the year.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 50), all Faculty regulations, including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to Major regulations and requirements set out below.

## Courses Open to First-Year Students

The following courses are open to First-year students: Art History 11.100, 11.110★, 11.111★, 11.115★, 11.120★, 11.121★, 11.202★, 11.205★, 11.206★, 11.220★, 11.221★, 11.223★, 11.230★, 11.241★, 11.242★, 11.250★, 11.260★, 11.261★, 11.286★, 11.287★.

All students taking an Art History course above the 100-level without the background of Art History 11.100 or 11.110★/11.111★ are strongly advised to prepare themselves by reading a general survey of art history, such as H.W. Janson's *History of Art*, prior to registration in such a course.

## Listing of Courses by Field

Students in the B.A. (Honours) and Combined B.A. (Honours) (other than with Architecture), B.A. and Combined B.A. (other than with Architecture) programs are required to take a certain number of credits from courses in four fields: Ancient and Medieval; Renaissance through 18th Century; Post-1800 European and American; and Canadian and Native. The following is a list of Art History courses by field, including those courses outside fields and those courses where the field may vary from year to year (students are advised to consult Art History each year to determine which of these courses are offered and which field they fall within):

### Courses outside fields:

Art History 11.100, 11.110★, 11.111★, 11.115★, 11.120★, 11.121★, 11.286★, 11.316★;

### Ancient and Medieval:

Art History 11.210★, 11.220★, 11.221★, 11.310★, 11.311★, 11.325★, 11.327★, 11.328★, 11.331★, 11.393★, 11.422★, 11.423★, 11.424★;

### Renaissance through 18th Century:

Art History 11.230★, 11.241★, 11.242★, 11.330★, 11.332★, 11.335★, 11.435★;

### Post-1800 European and American:

Art History 11.250★, 11.260★, 11.261★, 11.287★, 11.305★, 11.306★, 11.355★, 11.360★, 11.368★, 11.369★, 11.406★, 11.455★, 11.461★, 11.462★, 11.487★;

### Canadian and Native:

Art History 11.202★, 11.205★, 11.206★, 11.300★, 11.301★, 11.302★, 11.313★, 11.314★, 11.362★, 11.400★, 11.404★, 11.405★;

### Field Varies:

Art History 11.375★, 11.376★, 11.377★, 11.390★, 11.391★, 11.392★, 11.431★, 11.475★, 11.476★, 11.477★, 11.480★, 11.489★, 11.490★, 11.491★, 11.492★, 11.499.

## Honours Programs

### B.A. (Honours) in Art History

The B.A. (Honours) degree in Art History is designed for students contemplating graduate work in art history or museology, or who for other reasons wish to enrich their knowledge through an additional year of concentrated study.

Courses must be chosen in consultation with the Honours Supervisor. 10.0 credits in Art History are required, as follows:

1. Art History 11.100, or 11.110★ and 11.111★;
2. At least 2.0 credits at the 200-level;
3. At least 3.0 credits at the 300-level, including 11.316★;
4. At least 3.0 credits at the 400-level, no more than 1.5 of which may be directed readings or honours research essay credits.
5. 1.0 additional credit in Art History.

The courses offered at the 200-, 300- and 400-levels generally fall into the following four fields:

1. Ancient and Medieval;
2. Renaissance through 18th Century;
3. Post 1800-European and American;
4. Canadian and Native.

Students in an Honours program are required to take at least 1.0 credit above the 100-level from each of these four fields.

### Combined B.A. (Honours)

The Combined B.A. (Honours) degree program with other departments and disciplines in the Faculties of Arts and Social Sciences and Public Affairs and Management requires a minimum of 7.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. At least 0.5 credit above the 100-level from each of the following four fields: Ancient and Medieval; Renaissance through 18th Century; Post-1800 European and American; Canadian and Native.
3. At least 2.0 credits at the 400-level, no more than 1.0 of which 400-level credits may be directed readings or honours research essay credits.



## Combined B.A. (Honours) Program in Art History and Architecture

The Combined B.A. (Honours) degree program with the School of Architecture requires a minimum of 7.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. 11.120★ and 11.121★;
3. 5.0 additional credits, including at least 2.0 at the 400-level, no more than 1.0 of which 400-level credits may be directed readings or honours research essay credits.

Students in this program must also take at least 5.0 (and no more than 7.0) approved credits in Architecture (see the approved list below) including one credit at the 400-level.

Students should note that Architecture courses taken to fulfill the requirements of this program are not transferable to other degree programs in the Faculties of Arts and Social Sciences and Public Affairs and Management (with the exception of the Combined B.A. program in Art History and Architecture).

## B.A. Programs

### B.A. Program in Art History

The B.A. degree program is designed for students who wish a liberal arts education with an emphasis on art history. Students who decide that they wish to do graduate work, or who contemplate working in museology, should transfer to the Honours program as early as possible, preferably not later than the end of the Second year.

Courses must be chosen in consultation with the Supervisor of B.A. Programs. 6.0 credits in Art History are required, as follows:

1. Art History 11.100, or 11.110★ and 11.111★;
2. At least 2.0 credits at the 200-level;
3. At least 2.0 credits at the 300- or 400-levels;
4. 1.0 additional credit in Art History.

The courses offered at the 200-, 300- and 400-levels generally fall into the following four fields:

1. Ancient and Medieval;
2. Renaissance through 18th Century;
3. Post-1800 European and American;
4. Canadian and Native.

Students in a B.A. program are required to take at least 1.0 credit above the 100-level in each of the four fields.

### Combined B.A. Program

The Combined B.A. degree program with other departments and disciplines in the Faculty of Arts and Social Sciences requires a minimum of 5.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. At least 0.5 credit above the 100-level from each of the following four fields: Ancient and Medieval; Renaissance through 18th Century; Post-1800 European and American; Canadian and Native;
3. At least 1.0 credit at the 300- or 400-level.

### Combined B.A. Program in Art History and Architecture

The Combined B.A. degree program with the School of Architecture requires a minimum of 5.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. 11.120★ and 11.121★;

3. 3.0 additional credits, including at least 1.0 at the 300- or 400-level.

Students in this program must take at least 5.0 approved credits in Architecture (see approved list on p. 144), including 1.0 above the 200-level.

Students should note that Architecture courses taken to fulfill the requirements of this program are not transferable to other degree programs in the Faculties of Arts and Social Sciences and Public Affairs and Management (with the exception of the Combined B.A. (Honours) Program in Art History and Architecture).

## Approved Architecture Courses

Only the following approved courses in Architecture may be applied toward the architectural component of the combined B.A. degrees: Architecture 76.100★, 76.105★, 76.106★, 76.110★, 76.203★, 76.206★, 76.211★, 76.212★, 76.220★, 76.221★, 76.302★, 76.306★, 76.308★, 76.309★, 76.310★, 76.315★, 76.318★, 76.319★, 76.391★, 76.408★, 76.423★, 76.424★, 76.432★, 76.452★, 76.455★, 76.488★, 77.101★, 77.113★, 77.131★, 77.135★, 77.201★, 77.206★, 77.213★, 77.231★, 77.301★, 77.302★, 77.303★, 77.306★, 77.313★, 77.314★, 77.316★, 77.330★, 77.350★, 77.391★, 77.401★, 77.420★, 77.440★, 77.488★, 78.350★, 78.488★, 79.320★, 82.105★.

## Language Study and Requirements

It is strongly recommended, but not required, that B.A. students in Art History have the equivalent of at least a First-year course in a language suitable to their program. French 01.108, 20.106, or 20.160, German 22.118, Italian 26.100 or 26.101★ and 26.102★ and Spanish 38.115 are recommended.

B.A. (Honours) students are required to demonstrate a proficient reading knowledge of French, German, Italian, or another language relevant to their program. A grade of C+ or better in French 01.108, 20.106, or 20.160, German 22.118, Italian 26.100, or 26.101★ and 26.102★, or Spanish 38.115 will be accepted in lieu of a reading examination. If advanced study in art history is contemplated, a reading knowledge at this level is recommended in both French and German, as these are requirements of most graduate schools.

## Graduate Study

A Master of Arts program in Canadian art history, including Canadian native art, is offered through the Art History program of the School for Studies in Art and Culture. For further details see the current Calendar of the Faculty of Graduate Studies and Research.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Art History 11.100

### A History of Western Art: Prehistory to the Present

This course surveys the art and architecture of the Western World from the Paleolithic era to the present day.

Precludes additional credit for Art History 11.110★ and/or 11.111★.

Lectures and tutorial three hours a week.

Art History 11.110★

### Western Art: Prehistory to Medieval

This course surveys the art and architecture of the western world from the Paleolithic era to the end of the Gothic period.

Precludes additional credit for Art History 11.100.

Lectures and tutorial three hours a week.

**Art History 11.111 ★**

**Western Art: Renaissance to the Present**

This course surveys the art and architecture of the western world from the beginning of the Renaissance to the present day.

Precludes additional credit for Art History 11.100.

Lectures and tutorial three hours a week.

**Art History 11.115 ★**

**Art as Visual Communication**

A wide variety of visual material organized topically to examine the elements of art (line, shape, value, colour, texture, space), the principles of pictorial organization, the materials and techniques of art, and recurrent tendencies in artistic styles and outlooks.

Lectures and tutorial three hours a week.

**Art History 11.120 ★**

**Introduction to Architecture: Prehistoric to Medieval**

A survey of architecture including principles of structure and form, vernacular traditions and the architecture of high culture in Asia and the West before 1500.

Precludes additional credit for Architecture 76.110 ★ and 76.120 ★.

Lectures and tutorial three hours a week.

**Art History 11.121 ★**

**Introduction to Architectural History: Renaissance to the Present**

A selective survey of world architecture from 1500 to the present. This course explores architectural history as constructed narrative by reference to current ideological debates over margin and centre.

Precludes additional credit for Architecture 76.121 ★ and 76.220 ★.

Lectures and tutorial three hours a week.

**Art History 11.202 ★**

**Historical Canadian Art: Colonial Settlement to 1950**

Historical Canadian art, including painting, sculpture and photography, from the colonial settlement in New France to the roots of the modern movement before 1950.

Lectures three hours a week.

**Art History 11.205 ★**

**Arts of the First Peoples: The Woodlands, the Plains and the Subarctic**

This course is an introductory survey of the visual artistic traditions of the aboriginal peoples of the eastern and central regions of North America including the Woodlands, the eastern subarctic and the Plains from prehistoric to contemporary times.

Lectures three hours a week.

**Art History 11.206 ★**

**Arts of the First Peoples: The Southwest, the West Coast and the Arctic**

This course is an introductory survey of the visual artistic traditions of the aboriginal peoples of the western and northern regions of North America including the southwest, the plateau, northwest coast and the arctic from prehistoric to contemporary times.

Lectures three hours a week.

**Art History 11.220 ★**

**Western Medieval Art**

The development of Western medieval art from the earliest Christian productions through the late Gothic period is studied, with some reference to Eastern medieval art for purposes of comparison.

Lectures three hours a week.

**Art History 11.221 ★**

**Eastern Medieval Art**

This course examines the sources and the development of the arts in the Byzantine Empire as well as the relationship of its artistic productions to those of neighbouring countries.

Lectures three hours a week.

**Art History 11.230 ★**

**Renaissance Art**

This course emphasizes art in Italy from 1400 to 1600, with reference to developments in northern Europe.

Lectures three hours a week.

**Art History 11.241 ★**

**Seventeenth-Century European Art**

This course surveys Baroque painting, sculpture and architecture in Europe during the seventeenth century.

Lectures three hours a week.

**Art History 11.242 ★**

**Eighteenth-Century European Art**

This course surveys Rococo and Early Romantic painting, sculpture and architecture in Europe during the eighteenth century.

Lectures three hours a week.

**Art History 11.250 ★**

**Nineteenth-Century European Art**

This course surveys the major artists and artistic movements of nineteenth-century Europe.

Lectures three hours a week.

**Art History 11.260 ★**

**Twentieth-Century European Art**

This course surveys the major artists and movements of twentieth-century Europe.

Lectures three hours a week.

**Art History 11.261 ★**

**Introduction to the History of Photography**

Issues, themes, movements in photography and individual photographers from the origins of the medium to the present.

Lectures three hours a week.

**Art History 11.268 ★**

**History and Theory of Architecture: The Nineteenth Century**

This course examines selected topics in nineteenth-century architecture in Europe and North America. Emphasis is placed on the interaction of historiography, theory and architectural form.

Precludes additional credit for Art History 11.368 ★ and Architecture 76.308 ★.

Lectures three hours a week.

**Art History 11.286 ★**

**Art and Ideas: From Ancient Greece to the Twentieth Century**

A survey of theories that have shaped the Western approach to art and art criticism, including Plato, Aquinas, Kant, Hegel and Nietzsche. (Also listed as Philosophy 32.286 ★.)

Lectures three hours a week.

**Art History 11.287 ★**

**Art and Ideas: The Twentieth Century**

A survey of theories that have shaped the Western approach to art and art criticism including formalist, psychological, sociological, phenomenological, semiotic, poststructural and aesthetic approaches and including such thinkers as Fry, Greenberg, Freud, Arnheim, Hauser, Heidegger and Derrida. (Also listed as Philosophy 32.287 ★.)

Lectures three hours a week.

**Art History 11.300 ★**

**Canadian Painting and Sculpture**

Particular aspects of nineteenth-and/or twentieth-century painting and sculpture in Canada.

Prerequisite: Art History 11.202 ★ or 11.200 ★ or 11.201 ★, or permission of the Discipline.

Lectures three hours a week.

**Art History 11.301 ★**

**Contemporary Canadian Art**

This course examines in depth the art of selected groups and individuals working in Canada from the Second World War to the present.

Prerequisite: Art History 11.202 ★ or 11.260 ★, or permission of the Discipline.

Lectures three hours a week.



**Art History 11.302★**

**Canadian Architecture**

Offered in the School of Architecture as Architecture 76.302★.

Prerequisites: Art History 11.100 (or 11.110★ and 11.111★), or 11.120★ and 11.121★, or Architecture 76.120★ and 76.121★.

**Art History 11.305★**

**American Architecture**

This course studies the cultural history of the United States as expressed through its architectural heritage. Selected buildings and complexes from the earliest settlements through the early twentieth century are examined.

Lectures three hours a week.

**Art History 11.306★**

**American Painting and Sculpture**

This course studies the evolution of painting and sculpture in the United States from colonial times to the early twentieth century.

Lectures three hours a week.

**Art History 11.310★**

**Etruscan and Roman Art**

This course studies Etruscan art and the development of Roman art and architecture through the Constantinian period. (Also listed as Classical Civilization 13.334★.)

Prerequisite: Second-year standing or permission of the Discipline.

Lectures three hours a week.

**Art History 11.311★**

**Studies in Greek and Roman Art and Archaeology**

Period or theme in the art and archaeology of Ancient Greece and Rome. Topics may vary from year to year. (Also listed as Classical Civilization 13.335★.)

Prerequisite: Second-year standing or permission of the Discipline.

Lectures three hours a week.

**Art History 11.313★**

**Themes and Issues in African, Oceanic and Native American Arts**

Approaches, issues and themes in the study of the artistic traditions of non-Western people in Africa, the Pacific and the Americas.

Lectures three hours a week.

**Art History 11.314★**

**Inuit Art**

This course surveys the prehistoric, historic and contemporary art of the Canadian Inuit with reference to the art of the Eskimos of Alaska and Greenland.

Lectures three hours a week.

**Art History 11.316★**

**History and Methods of Art History**

The study of the history of art history and the methodologies and research tools employed by art historians.

Prerequisites: Minimum Third-year standing in Art History or permission of the Discipline.

Seminar three hours a week.

**Art History 11.325★**

**Russian Art**

The development of Russian art is studied from its origins into the eighteenth century with an emphasis on Byzantine influences as opposed to local characteristics.

Prerequisite: Art History 11.121★ or permission of the Discipline.

Lectures three hours a week.

**Art History 11.327★**

**Gothic Architecture and Monumental Sculpture**

This course investigates the sources and development of Gothic architecture and monumental sculpture in Northern and Southern Europe from its origins in the twelfth century through the fifteenth century.

Prerequisite: Art History 11.220★ or permission of the Discipline.

Lectures three hours a week.

**Art History 11.328★**

**Gothic Minor Arts**

The so-called minor arts of the Gothic tradition from the twelfth through the fifteenth century are studied, including stained glass, manuscripts, tapestries and embroideries, panel painting, goldsmithery and ivory carvings.

Prerequisite: Art History 11.220★ or permission of the Discipline.

Lectures three hours a week.

**Art History 11.330★**

**Florentine Renaissance Art**

This course examines Florentine art in its development from late Trecento ideas to the emergence of the High Renaissance vocabulary.

Lectures three hours a week.

**Art History 11.332★**

**Italian Art of the High Renaissance**

This course examines the art of the principal representatives of the High Renaissance including Leonardo da Vinci, Michelangelo, Raphael, Titian and the Florentine circle of Andrea del Sarto.

Lectures three hours a week.

**Art History 11.335★**

**Northern Renaissance Art**

This course examines the development of Flemish and German Renaissance art.

Lectures three hours a week.

**Art History 11.340★**

**Historical Techniques and Materials of Art**

Works of art as physical objects, providing a studio experience with materials and techniques used by artists through the ages.

Prerequisite: Third-year standing in Art History or permission of the Discipline.

Seminars two hours a week, studio two hours a week.

**Art History 11.355★**

**Late Nineteenth-Century Art in France**

This course treats the major artists of the Impressionist and Post-Impressionist movements in France.

Lectures three hours a week.

**Art History 11.360★**

**Art Since 1945**

This course treats major artists and artistic movements from 1945 to the present. Emphasis is placed on the United States.

Prerequisite: Art History 11.260★ or permission of the Discipline.

Lectures three hours a week.

**Art History 11.362★**

**The History of Photography in Canada**

Issues, themes, movements in photography and individual photographers from the arrival of the medium in Canada to the present.

Lectures three hours a week.

**Art History 11.369★**

**Modern Architecture: The Twentieth Century**

Developments in architectural form and culture through the course of the twentieth century. Emphasis will be placed on the formation and subsequent critique of the Modern Movement. (Also listed as Architecture 76.221★.)

Precludes additional credit for Architecture 76.309★.

Lectures three hours a week.

**Art History 11.375★**

**Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

**Art History 11.376★**

**Seminar on a Selected Museum Exhibition**

Focus on a major exhibition held at a local museum. Students are expected to bear all travel and other costs arising from required visits to the museum.



Prerequisite: Permission of the Discipline.  
Seminar three hours a week.

#### Art History 11.377★

##### **Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.  
Prerequisite: Permission of the Discipline.  
Seminar three hours a week.

#### Art History 11.390★

##### **Practicum in Art History**

Practical experience gained by working on specific projects under the supervision of the staff of one of the museums or related settings in the Ottawa area. A maximum of 1.0 credit of practicum may be offered in fulfillment of Art History requirements.  
Prerequisite: B.A. or B.A. (Honours) Art History registration with Third- or Fourth-year standing and a GPA of 9.0 or better in Art History courses, or permission of the Discipline.

#### Art History 11.391★

##### **Practicum in Art History**

Practical experience gained by working on specific projects under the supervision of the staff of one of the museums or related settings in the Ottawa area. A maximum of 1.0 credit of practicum may be offered in fulfillment of Art History requirements.  
Prerequisite: B.A. or B.A. (Honours) Art History registration with Third- or Fourth-year standing and a GPA of 9.0 or better in Art History courses, Art History 11.390★; or permission of the Discipline.

#### Art History 11.392★

##### **Practicum in Art History**

Practical experience gained by working on specific projects under the supervision of the staff of one of the museums or related settings in the Ottawa area. A maximum of 1.0 credit of practicum may be offered in fulfillment of Art History requirements.  
Prerequisite: B.A. or B.A. (Honours) Art History registration with Third- or Fourth-year standing and a GPA of 9.0 or better in Art History courses, Art History 11.390★; or permission of the Discipline.

#### Art History 11.393★

##### **Practicum in Art History through Archaeology**

Practical experience from participating in specific archaeological projects under the supervision of project staff and Carleton faculty. Readings, lectures and study trips are integrated with the program. A maximum of 1.0 credit of practicum may be offered in fulfillment of Art History requirements.  
Prerequisites: B.A. or B.A. (Honours) Art History registration with Third- or Fourth-year standing and a GPA of 9.0 or better in Art History courses, or permission of the Discipline.

#### Art History 11.400★

##### **Topics in Canadian Art**

An examination of the contribution of selected individuals or movements in the context of Canadian society and the history of modern art.  
Prerequisite: Art History 11.202★ or 11.300★ or 11.301★; or permission of the Discipline.  
Seminar three hours a week.

#### Art History 11.404★

##### **Topics in Contemporary Inuit Art**

This course examines selected aspects of the contemporary arts of Canadian Inuit artists.  
Seminar three hours a week.

#### Art History 11.405★

##### **Topics in Canadian Indian Art**

Selected aspects of the contemporary arts of Canadian artists of Indian ancestry.  
Seminar three hours a week.

#### Art History 11.406★

##### **Topics in American Art**

This seminar examines selected aspects of American art and architecture.  
Prerequisite: Permission of the Discipline.  
Seminar three hours a week.

#### Art History 11.422★

##### **Topics in Eastern Medieval Art**

Aspects of Eastern Medieval art and their influences in Western Europe. The topic for 1998-99 is Byzantine and Eastern European Icon Painting.  
Prerequisite: Art History 11.221★ or permission of the Discipline.  
Lectures three hours a week.

#### Art History 11.423★

##### **Topics in Western Medieval Art**

Aspects of Western Medieval art and their relationship to the Eastern Mediterranean area. The topic for 1998-99 is Merovingian and Carolingian Art..  
Prerequisite: Art History 11.220★ or permission of the Discipline.  
Lectures three hours a week.

#### Art History 11.424★

##### **The Interrelationship of Art History and Underwater Archaeology**

This course considers the history of underwater archaeology, its relation to the development of underwater technology and land archaeology, and some of the most interesting art historical finds in sunken cities and shipwrecks.  
Prerequisites: Art History 11.100 (or 11.110★/11.111★) and at least one of 11.210★, 11.220★ or 11.221★, or permission of the Discipline.  
Seminar two hours a week.

#### Art History 11.431★

##### **Topics in Iconography**

Attention is focused on selected problems in the meaning of visual images and available textual sources. The topic for 1998-99 is Mythical, Religious and Occult Iconography in Art, c. 1850-1914.  
Lectures three hours a week.

#### Art History 11.435★

##### **Topics in Renaissance Art**

This seminar deals with selected aspects of Renaissance art and their influence. The topic for 1998-99 is Renaissance Sculpture: Issues and Contexts.  
Prerequisite: Art History 11.230★ or permission of the Discipline.  
Lectures three hours a week.

#### Art History 11.455★

##### **Topics in Nineteenth-Century European Art**

Aspects of nineteenth-century European art.  
Prerequisite: Art History 11.250★ or 11.355★; or permission of the Discipline.  
Lectures three hours a week.

#### Art History 11.461★

##### **Topics in Twentieth-Century Art**

Selected aspects of twentieth-century art. The topic for 1998-99 is Contemporary Earthworks and Environmental/Ecological Art.  
Prerequisite: Art History 11.260★ or permission of the Discipline.  
Seminar three hours a week.

#### Art History 11.462★

##### **Issues in the Theory and History of Photography**

Relates the themes of selected theoretical texts on photography to specific examples of photographic practice.  
Seminar three hours a week.

#### Art History 11.475★

##### **Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.  
Prerequisites: Fourth-year Honours standing in Art History and permission of the Discipline.  
Seminar three hours a week.

#### Art History 11.476★

##### **Seminar on a Selected Museum Exhibition**

Focus on a major exhibition held at a local museum. Students are expected to bear all travel and other costs arising from required visits to the museum.  
Prerequisites: Fourth-year Honours standing in Art History and



permission of the Discipline.  
Seminar three hours a week.

**Art History 11.477★**

**Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.  
Prerequisite: Permission of the Discipline.  
Seminar three hours a week.

**Art History 11.480★**

**Topics in Architectural History**

Selected aspects of architectural history from ancient times to the present. The topic for 1998-99 is Canadian Architecture: The Twentieth Century.  
Seminar three hours a week.

**Art History 11.487★**

**Topics in Art Criticism**

This course introduces major problems and theories in art criticism with particular attention to whether the theories can be accepted.  
Prerequisite: Permission of the Discipline.  
Seminar three hours a week.

**Art History 11.489★**

**Topics in Art History**

Selected aspects of art history from ancient times to the present.  
Seminar three hours a week.

**Art History 11.490★**

**Directed Readings and Research**

Supervised readings and research projects. Guidelines must be obtained from the Honours supervisor prior to registration. A written project outline, approved by the supervising Art History faculty member, must be submitted to the Honours supervisor by the last day for course changes.  
Prerequisites: Fourth-year Honours standing in Art History and permission of the Discipline.

**Art History 11.491★**

**Directed Readings and Research**

Supervised readings and research projects. Guidelines must be obtained from the Honours supervisor prior to registration. A written project outline, approved by the supervising Art History faculty member, must be submitted to the Honours supervisor by the last day for course changes.  
Prerequisites: Fourth-year Honours in Art History standing and permission of the Discipline.

**Art History 11.492★**

**Directed Readings and Research**

Supervised readings and research projects. Guidelines must be obtained from the Honours supervisor prior to registration. A written project outline, approved by the supervising Art History faculty member, must be submitted to the Honours supervisor by the last day for course changes.  
Prerequisites: Fourth-year Honours standing in Art History and permission of the Discipline.

**Art History 11.499**

**Honours Research Essay**

An essay of approximately 10,000 words, resulting from independent research, supervised by Art History faculty.  
Prerequisites: Fourth-year Honours standing in Art History with a GPA of 9.0 or better calculated over all courses in Art History; and permission of the Discipline.

# Biochemistry

## (Science)

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544 Tory Building  
Telephone: 520-2600 ext. 3885

### Academic Administration

Director

**J. Sinclair**

Members of the Institute

**J.W. ApSimon • P. Bulst • N. Chaly • J.J. Cheetham • B. Hollebone • I.B. Lambert • J. Sinclair  
• M.L. Smith • K.B. Storey • C.S. Tsai • J. Vierula • D.C. Wigfield • R.H. Wightman • R.C. Wyndham**

Associate Member

**V.L. Seligy • H. Yamazaki**

### Teaching Staff

Professors

**K.B. Storey, B.Sc. (Calgary), Ph.D. (British Columbia), F.R.S.C. • Chishlum S. Tsai, B.Sc. (Taiwan), M.Sc., Ph.D. (Purdue)**

Associate Professors

**Iain B. Lambert, B.Sc. (Guelph), Ph.D. (McMaster) • J. Sinclair, B.Sc., Dip.in Biophysics (Edinburgh), Ph.D. (East Anglia)**

Assistant Professor

**J.J. Cheetham, B.Sc., Ph.D. (McMaster)**

Adjunct Research Professor

**H. Yamazaki, M.S. (Hokkaido), Ph.D. (Wisconsin)**

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 117), in addition to all regulations and requirements of the Institute as set out below.

### Honours Programs

#### Honours Bachelor of Science in Biochemistry and Biotechnology

See description of this special program on p. 161.

#### Honours Bachelor of Science in Biochemistry

The Institute of Biochemistry also offers a four-year program leading to an Honours B.Sc. in Biochemistry, intended to provide more specialized training for biochemical research or a related career. An Honours degree with above-average standing is normally required for post-graduate studies in this discipline.

Students entering the program must satisfy the general requirements for B.Sc. Honours (p. 62). The following 20.0 credits are required, taken in a pattern approved by the Director of the Institute:

1. Biology 61.103★, 61.214★, 61.314★, either 61.201★ or 61.202★, either 61.325★ or 61.335★, and 1.0 credit selected from approved 300- or 400-level Biology courses (see Note 6 p. 150);
2. Chemistry 65.100, 65.210 or 65.211★ and 65.353★, 65.220 or 65.223★, and 65.224★, 65.233★, 65.321★, 65.322★, 65.325★;
3. (a) Biochemistry 63.220★, 63.305★, 63.310, 63.401★, and 63.498;  
(b) At least 1.0 credit chosen from: Biochemistry 63.402★, 63.404★, 63.405★, 63.406★, 63.407★, 63.422★, 63.432;
4. Physics 75.101★ and 75.102★, or 75.107★ and 75.108★, Mathematics 69.107★, 69.117★, and 69.257★;
5. 2.0 approved arts or social science credits;
6. 1.5 credits related to the student's area of specialization. Some recommended courses include: Biochemistry courses listed in 3(b) above, 63.491★; Biology courses listed in note 6 below; Chemistry 65.212★, 65.311★, 65.312★, 65.353★, 65.354★, 65.370★, 65.380★, 65.422★, 65.423★; Physics 75.235★, 75.236★; Mathematics 69.207★, 69.208★, 69.217★; Computer Science 95.107★;
7. 1.0 free option credit or 0.5 free option credit if Biology 61.102 is taken in lieu of the Ontario Academic Credit in Biology.

#### Notes on Programs:

1. A completed credit for Biology 61.102 or 61.209★ and 61.230★ may replace the requirement for Biology 61.103★ and 61.104★.



Students who have completed only Biology 61.230★ may replace 61.103★ and 61.104★ with 61.230★ plus a 0.5 credit Biology elective. Students who have completed only 61.209★ must pass 61.103★ and 61.104★; Biology 61.209★ may then be credited as a free elective.

2. For the purposes of calculation, the Major or Honours subjects include all Biochemistry courses, plus the Biology and Chemistry courses fulfilling requirements 1 and 2 in each program.

3. In choosing a program, students should consider the prerequisites required for any courses that they wish to take in later years. In particular, some options may be offered only in alternate years and may require as prerequisites one or other of Biology 61.325★, 61.331★ and 61.335★. Because of timetable constraints, students may have to take Chemistry 65.210 and Biology 61.201★ or 61.202★ in different years.

4. Credit will not be given for Biology 61.220★ or Biochemistry 63.220★ taken after Biochemistry 63.310 or equivalent.

5. "Permission of the Institute" in course prerequisites normally means permission of the Director or the Honours Project coordinator.

6. The following 300-400 level Biology courses are approved to satisfy requirement 1 for Biochemistry students: 61.321★, 61.325★, 61.331★, 61.333★, 61.335★, 61.351★, 61.355★, 61.408★, 61.409★, 61.413★, 61.414★, 61.416★, 61.419★, 61.421★, 61.426★, 61.429★, 61.430★, 61.431★, 61.432★, 61.433★, 61.435 and 61.455.

7. To qualify for graduation with a Major in Biochemistry students must meet the requirements on p. 150 except that they must present 20.0 approved full credits beyond Qualifying-University year and have a grade of C- or better in at least half of the 20.0 credits.

8. Students who wish to take 61.214★ in the Winter term of their first year must obtain a grade of C- or better in 61.103★.

A typical First Year course pattern in a Biochemistry program will be the same as that for Biochemistry and Biotechnology. (See p. 161.)

## Major Program

### Bachelor of Science in Biochemistry

The Institute of Biochemistry offers a four-year (20.0 credit) program leading to a B.Sc. majoring in Biochemistry and intended to provide a broad basic training for students who have a general interest in biological functions at the molecular level or who are planning a career in biochemistry or a related field of biomedical science that does not demand post-graduate study. Courses in Biology and Chemistry (and resources from these departments) are integrated into the program to provide the background that is fundamental to an understanding of the biochemistry of animals, microorganisms and plants.

Many graduates from the 15-credit B.Sc. programs in Biology or Chemistry may qualify for admission to the final year of the Major B.Sc. in Biochemistry, if they have successfully completed the 300-level Biochemistry courses.

Students entering the program must satisfy the general requirements for a Major B.Sc. (p. 117). The following 20.0 credits are required:

1. 3.5 Biology credits: 61.103★, 61.214★, 61.314★, either 61.201★ or 61.202★, either 61.325★ or 61.335★, and 1.0 credit selected from approved 300- or 400-level Biology courses (see Note 6 p. 150);

2. 4.5 Chemistry credits: 65.100, 65.210 or 65.211★ and 65.353★, 65.220 or 65.223★ and 65.224★, 65.233★, 65.321★, 65.322★ or 65.325★.

3. (a) Biochemistry 63.220★, 63.305★, 63.310, 63.401★, and (b) at least 1.0 credit chosen from: Biochemistry 63.402★, 63.404★, 63.405★, 63.406★, 63.407★, 63.422★, 63.432★;

4. Physics 75.101★ and 75.102★, or 75.107★ and 75.108★, Mathematics 69.107★, 69.117★ and 69.257★;

5. 2.0 approved arts or social science credits;

6. 3.0 credits related to the student's area of interest. Some recommended courses include: Biochemistry listed in 3(b) above, 63.491★; Biology courses listed in note 6 above; Chemistry 65.212★, 65.311★, 65.312★, 65.322★, 65.325★, 65.353★, 65.354★, 65.370★, 65.380★, 65.422★, 65.423★; Physics 75.235★, 75.236★; Mathematics 69.207★, 69.208★, 69.217★, 69.257★; Computer Science 95.107★;

7. 1.0 credit free option.

## Graduate Program

No graduate program is offered by the Institute but the graduate offerings of the Departments of Biology and Chemistry include projects and courses that may be appropriate for students with an interest in biochemistry. Details are found in the *Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Biochemistry 63.220★

#### Cell Physiology and Biochemistry

A lecture and laboratory course on cellular functions and their inter-relationships. It introduces topics including thermodynamics, membrane structure and function, transport mechanisms, basic metabolic pathways, energy production and utilization, communications between cells. (Also listed as Biology 61.220★.) Prerequisites: Biology 61.220★. Credit will not normally be given for Biochemistry 63.220★ or equivalent taken after Biochemistry 63.310.

Prerequisites: Biology 61.103★ and or equivalent, Chemistry 65.100 or permission of the Institute.

Lectures three hours a week, laboratory four hours a week.

### Biochemistry 63.305★

#### Practical Biochemistry

A laboratory and tutorial course introducing the basics of experimental biochemistry and illustrating the theory and concepts dealt with in Biochemistry 63.310.

Prerequisites: Chemistry 65.220 or 65.223★ and 65.224★; Chemistry 65.210 or 65.211★ or Biochemistry 63.220★/Biology 61.220★ with a grade of C- or better, or permission of the Institute. Biochemistry 63.310 or equivalent is recommended as a co-requisite. Laboratory four hours a week plus biweekly assignments.

### Biochemistry 63.310

#### General Biochemistry

Chemistry and metabolism of proteins, lipids, carbohydrates and nucleic acids. Mechanism of action of enzymes. Metabolic control mechanisms and inter-relations. Biological oxidation. Biosynthesis of structural, storage and informational compounds.

Prerequisites: Chemistry 65.220 or 65.223★ and 65.224★; Chemistry 65.210 or 65.211★ or Biochemistry 63.220★/Biology 61.220★ with a grade of C- or better, or permission of the Institute. A course in genetics is strongly recommended.

Lectures three hours a week.

### Biochemistry 63.401★

#### Methods In Biochemistry

The course deals with the principles and applications of modern biochemical methodology, including use of radioisotope tracers, ultracentrifugation, electrophoresis and ion-exchange chromatography.

Prerequisite: Biochemistry 63.305★ or permission of the Institute.

Lectures and discussion two hours, laboratory six hours a week.

**Biochemistry 63.402★****Biomacromolecules**

Biochemistry of polysaccharides, proteins and nucleic acids. Discussion of experimental approaches to purification and conformational studies of biomacromolecules, their interaction in solutions, function and regulation of enzymes. Workshop sessions include discussion of experimental design and interpretation, and solving of related numerical problems.

Prerequisite: Biochemistry 63.310 or permission of the Institute.

Lectures two hours, workshop two hours a week.

**Biochemistry 63.404★****Industrial Biochemistry**

A course illustrating the application of biochemistry to the production of biological compounds useful in nutrition, medicine, and the food and chemical industries. The course also reviews the general strategies for efficient production of these compounds by controlling the activities of living cells or enzymes.

Prerequisite: Biochemistry 63.310 or permission of the Institute.

Lectures three hours a week.

**Biochemistry 63.405★****Biochemical Regulation**

A half-credit in biochemical regulation. Topics include regulation at the transcriptional, translational and metabolic level. Regulation of cell and subcellular organelle function and other timely topics may also be included. A detailed course outline is available from the instructor in any given year.

Precludes additional credit for Biochemistry 63.403★.

Prerequisite: Biochemistry 63.310.

Lectures three hours a week.

**Biochemistry 63.406★****Bioinformatics**

The use of computers to solve biochemical problems. Topics may include data and software acquisition, sequence analyses, genomics, biomolecular interaction and kinetics, metabolic simulation, molecular modelling of biomolecules and biodiversity.

Prerequisites: Biochemistry 63.310; or permission of the Institute.

Lecture one hour a week, computer workshop three hours a week.

**Biochemistry 63.407★****Membrane Biochemistry**

Biochemical and biophysical aspects of biomembrane structure and function. Topics may include: membrane lipids and proteins, lipid polymorphism, model membranes, liposomes, membrane biogenesis, the membrane cytoskeleton, membrane trafficking,

membrane fusion, exocytosis and signal transduction across membranes.

Prerequisite: Biology 61.220★ or Biochemistry 63.220★ or 63.310 (taken concurrently); or permission of the Institute.

Lectures two hours a week and workshop two hours a week.

**Biochemistry 63.422★****Mutagenesis and DNA Repair**

A mechanistic study of mutagenesis and DNA repair. Topics will include DNA structure perturbations, spontaneous and induced mutagenesis, the genetics and biochemistry of DNA repair and recombination, and the role of mutations in the development of genetic disease and cancer. (Also listed as Biology 61.422★).

Prerequisites: Biology 61.220★ or Biochemistry 63.220★ or 63.310 (taken concurrently); Biology 61.314★, or permission of the Institute.

Lectures two hours a week and workshop two hours a week.

**Biochemistry 63.432★****Immunology**

The organization and function of the immune system. The anatomy of the immune system, and the molecular and genetic bases of the immune response. The laboratory teaches applications of animal cell culture in studies of immune cells and their products. (Also listed as Biology 61.432★.)

Prerequisite: Biology 61.221★ or 61.321★; or permission of the Institute.

Lectures three hours a week, laboratories four hours a week.

**Biochemistry 63.491★****Selected Topics in Biochemistry**

Selected topics of current interest in biochemistry are offered upon approval by the Director in consultation with members of the Institute.

**Biochemistry 63.498****Research Project**

Students carry out a research project approved by the Director, under the supervision of a faculty member of the Institute, in either the Biology or Chemistry departments. A report must be submitted to the supervisor by the last day of classes, and will be examined by committee.

Prerequisites: Biochemistry 63.305★ and 63.310 or equivalent, and eligibility to continue in Honours Biochemistry or in Biochemistry and Biotechnology.

Lectures and associated work average at least eight hours a week.



# Biology

## (Science/Arts and Social Sciences)

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### Academic Administration

Chair, I.B. Lambert

Associate Chair (Graduate Studies), N. Chaly

Undergraduate Adviser, J.P. Vierula

### Teaching Staff

#### Professor Emeriti

**H.F. Howden**, B.A., M.S. (Maryland) Ph.D. (North Carolina) • **V.N. Iyer**, M.Sc., Ph.D. (Bombay) • **H.H.J. Nesbitt**, B.A. (Queen's), M.A., Ph.D. (Toronto) D.Sc. (Leiden, Carleton) F.L.A., F.R.E.S. F.Z.S. • **H.G. Merriam**, B.Sc. (Guelph), Ph.D. (Cornell)

#### Professors

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#### Associate Professors

**George R. Carmody**, A.B., Ph.D. (Columbia) • **Nathalie Chaly**, B.Sc., M.Sc. (Carleton), Ph.D. (Laval) • **Hans Damman**, B.Sc. (Connecticut), Ph.D. (Cornell) • **Lenore Fahrig**, B.Sc. (Queen's), M.Sc. (Carleton), Ph.D. (Toronto) • **Iain B. Lambert**, B.Sc. (Guelph), Ph.D. (McMaster) • **John Sinclair**, B.Sc., Dip. Biophysics (Edinburgh), Ph.D. (East Anglia) • **John Vierula**, B.Sc. (York), Ph.D. (Calgary)

#### Assistant Professors

**J. Cheetham**, B.Sc., Ph.D. (McMaster) • **Mark R.L. Forbes**, B.Sc. (Acadia), M.Sc. (Western), Ph.D. (Toronto) • **Myron L. Smith**, B.Sc. (Alberta), M.Sc., Ph.D. (Toronto)

#### Adjunct Research Professors

**S.P.J. Brooks**, Health Canada • **M.J. Canny** • **K.E. Freemark**, Canadian Wildlife • **D.R. Gardner**, Carleton University • **W.D. Gould**, Natural Resources Canada • **B.F. Johnson** • **L. Lefkovitch**, Agriculture Canada • **B.L.A. Miki**, Agriculture Canada • **P. Mineau**, National Wildlife • **V.L. Seligy**, Health Canada • **D.M. Wood**, Agriculture Canada • **H. Yamazaki**, Carleton University

### General Information

Students intending to major in Biology are strongly advised to acquire a good background in chemistry and physics as well as OAC mathematics or equivalent level.

### Undergraduate Programs

The Department of Biology offers both Honours and Major programs leading to either a B.Sc. or a B.A. in Biology. Students enrolled in any of these programs must arrange their courses in consultation with the Undergraduate Adviser, in one of the patterns outlined. None of the courses in the Department of Biology are available by means of Challenge for Credit.

### Graduation Regulations

In order to graduate, B.Sc. students must fulfil all University regulations (see p. 49) and all Faculty regulations (see p. 120). B.A. students must fulfill all University regulations (see p. 49) and all Faculty regulations (see p. 72) including those relating to First-Year Seminars and Breadth courses. In addition, all depart-

mental regulations and requirements as set out below must be fulfilled.

For Biology Honours students, the Honours GPA is calculated on the basis of all Biology courses taken by a student during his or her degree program and counted towards the degree. For students in Biology Combined Honours programs, their Honours GPA will be calculated on the basis of all required credits in the two Honours subjects as stated in the respective program requirements.

For Biology Major students, the Major GPA is calculated on the basis of all biology courses taken by the student during his or her degree program and counted towards the degree. For students in Biology Combined three year programs, their major GPA will be calculated on the basis of all credits counted towards the degree in the two Major subjects.

### B.Sc. (Honours) Program

The Honours program in Biology is primarily intended for students planning a professional career in research, teaching or administration in biology, or in one of the fields of applied biology, such as the health sciences, agriculture or environmental science. An Honours degree is usually essential for admission to graduate

studies. Students planning such a career are strongly advised to enter the Honours program as early as possible, certainly by the end of the Second year. Students must complete the program shown in the Chart (see p. 154) and satisfy the general requirements for Honours stated on p. 117 and take the following 20.0 credits in a pattern approved by the Undergraduate Adviser. (This allows specialization in such biological subdivisions as ecology, behaviour, cell and molecular biology, genetics, microbiology, plant or animal physiology, and systematics.)

1. 7.0 Biology credits to include Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.325★ or 61.335★, 61.491★, 61.498, and 1.5 credits advanced Biology options;
2. Chemistry 65.100; either Physics 75.101★ and 75.102★ or 75.107★ and 75.108★; Mathematics 69.107★ and either 69.117★ or 69.257★, or equivalent;
3. 2.0 additional Science credits above the 100-level and not in Biology;
4. 1.0 additional credit, chosen in consultation with the Undergraduate Adviser related to the student's area of specialization;
5. 4.0 advanced Science credits, selected in consultation with the Undergraduate Adviser or a faculty member working in the area of specialization chosen by the student;
6. 2.0 approved arts or social science credits;
7. 1.0 free-option credit.

Fourth-year students are strongly urged to attend the departmental research seminars.

### Areas of Specialization

Students should choose their advanced Science and Biology option credits at the 300- and 400-level so that they can develop an area of specialization according to their preferred area of biology. Possible areas of specialization include molecular and cellular biology, microbiology, plant and animal physiology, animal behaviour, ecology, and systematics. Note that 400-level courses can be taken by Biology Majors in their Third year of study, provided the appropriate prerequisites are met.

Courses should be chosen in consultation with the Undergraduate Adviser or a faculty member working in an area close to the interest of the student. This consultation should preferably begin before entering the Third year, to ensure that courses that may be given only in alternate years are taken in the correct sequence. In any case, students must consult the Undergraduate Adviser before registering in the Fourth year.

Biology 61.361★ is strongly recommended for students in ecology, animal behaviour and systematics.

### Co-op Option (Honours) in Biology

General information on the Co-op program can be found on p. 39.

Co-operative education formally integrates a student's academic experience with work experience in industry and/or government. Work opportunities, which are available on a competitive basis, are coordinated to complement the student's course work and interests. Practical work experience provides insights and opportunity for development, and helps prepare an individual for a career in Biology.

### Operation of the Co-operative Option

The program is administered by the Co-operative Program Committee which is responsible for securing potential employers, arranging interviews, and managing the program. The details of the program are provided in the Biology Co-op Student Handbook.

### Admission Requirements

Students in good standing in the Honours Biology program may apply for admission to the B.Sc. (Honours) Co-operative Option,

on completion of the First, Second, or Third Year of the B.Sc. (Honours) Biology program. To be eligible for admission, a student must:

1. be registered as a full-time student in the Biology Honours program;
2. have a GPA of 8.0 or better in Biology and an overall GPA of 6.5 or better;
3. be eligible to work in Canada.

Meeting the above requirements will only establish eligibility to enter the program, enrollment in the Co-operative option is limited. Application forms for admission to the Co-operative option are available from the Co-op Office for Engineering and Science and should be submitted before May 8th, September 8th, or January 8th.

### The Work/Study Sequence

There are three four-month work terms. The timing of the employment terms is flexible. Examples include:

- (a) summer employment terms following Years 2, 3, and 4;
- (b) extended summer and fall employment term following year 3 and summer employment following either Year 2 or Year 4

If no suitable job placements can be made, the student will revert to the regular Honours program.

### Continuance in the Option

During work terms, students must register in one of three work term courses: 61.299★, 61.399★ or 61.499★; these courses will be graded *Sat* or *Uns*. To continue in the option, students must successfully complete their work terms, one of the requirements of which is to hand in a Work Term Report judged to be "Satisfactory". The report requirements and evaluation criteria are described in the Biology Co-op Student Handbook, which also lists all the circumstances in which students may be required to withdraw from the program. In addition, students must maintain the academic standards required for the co-operative education option.

### Graduation Requirements

In addition to satisfying the requirements of the Co-operative option as described above, a student must have completed the 20.0 credits specified for the Biology Honours program and three work term courses.

Graduates successfully completing the above requirements will receive a Co-operative degree designation in addition to the Honours designation.

### Honours in Biology and Biotechnology

See p. 161.

### Combined Honours in Biology and Physical Geography

Program advisers: S.B. Peck (Biology) and C. Burn (Geography).

Students desiring a comprehensive basic education in both biology and physical geography may apply for admission to a Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program.

Course requirements of the Combined Honours B.Sc. program are 20.0 credits including:

1. Biology 61.103★ and 61.104★; Geography 45.105; Mathematics 69.107★ and either 69.117★ or 69.257★; Chemistry 65.100;
2. 2.0 optional arts or social science credits. 1.0 credit in Geography, other than the Physical Geography courses listed on p. 261, is recommended;



3. 1.0 additional Science credit from the list on p. 117 (either Physics 75.107★ and 75.108★, or 75.101★ and 75.102★ is required unless OAC Physics is presented as an entrance credit);

4. 1.0 free-option credit;

5. 10.0 credits in Biology (or Biochemistry) and Physical Geography (see courses listed on p. 261) beyond First-year level, including at least 0.5 credit involving a field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 may be at the 200-level;

6. 1.0 additional credit in Science or Computer Science above the 100-level, not in Biology or Geography and chosen in consultation with the student's program adviser;

7. Biology 61.498 or Geography 45.496.

### Combined Honours in Biology and Geology

Program advisers: S.B. Peck (Biology) and R.T. Patterson (Earth Sciences).

Students desiring a comprehensive basic training in both biology and geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in both Biology 61.103★, 61.104★, and Geology 67.100.

Course requirements of the Combined Honours program are listed below:

1. Biology 61.103★, 61.104★, Geology 67.100, Mathematics 69.107★ and 69.117★. One of, Chemistry 65.100, either Physics 75.101★ and 75.102★ or 75.107★ and 75.108★. (The omitted subject, i.e. chemistry or physics, must have been taken at the OAC level.)

2. 10.0 credits in Biology (or Biochemistry) and Geology beyond First-year level, including at least 0.5 credit field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 may be at the 200-level.

3. Biology 61.498 or Geology 67.498.

4. 0.5 credit in Statistics (Mathematics 69.257★ is recommended) and 0.5 credit in Computer Science (Computer Science 95.104★ is recommended).

5. 3.0 optional credits, at least 2.0 of which must be acceptable arts or social science credits.

6. 1.0 Science elective credit.

7. A language requirement must be met during the Third year by obtaining a credit in, or demonstrating reading proficiency in one of French, German, Russian, Spanish, Italian, Latin, Greek, or any language acceptable to the program advisers and in which suitable arrangements can be made for the examination.

### Combined Bachelor of Science Honours in Neuroscience

Program advisers: J. Cheetham (Biology) and J. Kelly (Psychology)

Students desiring a comprehensive basic education in the neurosciences may apply for admission to this Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program.

Course requirements of the Combined Honours B.Sc. program are 20.0 credits, as follows:

#### First Year

Biology 61.103★, 61.104★;  
Psychology 49.100 as a Social Science elective;  
Mathematics 69.107★ and 69.117★;  
Chemistry 65.100;  
Physics, either 75.101★ and 75.102★, or 75.107★ and 75.108★.

#### Second Year

Psychology 49.200, 49.220★ and 49.270★;  
Biology 61.201★ and 61.220★;  
1.0 arts or social science credit other than Psychology;  
Chemistry 65.223★ and 65.224★.

#### Third Year

1.0 credit from Psychology Science Continuation courses;  
One of Psychology 49.320 or 49.370 Honours Seminars;  
Mathematics 69.257★ and 69.259★ (Psychology 49.300 may be substituted);  
Biology 61.214★ and 61.335★;  
1.0 Biology or Biochemistry option.

#### Fourth Year

Psychology 49.497 or Biology 61.498 in neurophysiology, animal behaviour, neuropsychology or a related topic;  
1.0 credit from Psychology Science Continuation courses;  
Biology 61.435 or equivalent;  
1.0 advanced credit in Biology;  
1.0 free-option credit.

### Recommended Sequence of Courses for Students in Biology B.Sc. Honours and Major programs

#### First Year - Fall Term

Mathematics 69.107★  
Biology 61.103★  
Physics 75.107★

#### First Year - Winter Term

Biology 61.104★  
Mathematics 69.117★ or  
Mathematics 69.257★  
Physics 75.108★

#### First Year - Fall/Winter Term

Chemistry 65.100  
Arts/Social Science Option

#### Second Year - Fall Term

Plant Biology 61.202★  
Cell Physiology 61.220★  
Ecology 61.260★

#### Second Year - Winter Term

Animal Biology 61.201★  
Genetics 61.214★  
Biology Option★

#### Second Year - Fall/Winter Term

Non-Biology Advanced Science Option  
Arts/Social Science Option

#### Third Year - Fall Term

Animal Physiology 61.335★  
/or Biology Option★  
Biology Option★

#### Third Year - Winter Term

Plant Physiology 61.325★  
/ or Biology Option★  
Biology Option★

#### Third Year - Fall/Winter Term

Non-Biology Advanced Science Option  
Science Option  
Free Option

## B.Sc. (Major) Program

The Bachelor of Science program in Biology recognizes the strong dependence of most modern biology on the physical sciences and mathematics. It treats biology as a unified subject based on common principles and qualities expressed in diverse ways by different organisms. The Major program is not primarily regarded as professional preparation by itself, but its aim is to provide a strong base in concepts and basic facts which should be adaptable to changing demands and needs in modern society. Students enrolled for a Bachelor of Science degree with a Major in Biology must satisfy the general requirements for Science stated on p. 117 and take the following 15.0 credits in a pattern approved by the Undergraduate Adviser.

The recommended course pattern is shown in the Chart on p. 154. It is important that students enrol in courses in the recommended sequence to ensure that subsequent prerequisites are met. The program can be summarized as follows:

1. 6.0 Biology credits to include Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.325★ or 61.335★, 2.0 credits advanced Biology options;
2. Chemistry 65.100; either Physics 75.101★ and 75.102★, or Physics 75.107★ and 75.108★; Mathematics 69.107★ and either 69.117★ or 69.257★ or equivalent;
3. 2.0 additional Science credits above the 100-level and not in Biology;
4. 1.0 additional Science credit;
5. 2.0 approved arts or social science credits;
6. 1.0 free-option credit.

## B.A. Programs in Biology

The Department of Biology also offers B.A. (Honours) and B.A. degrees in Biology alone or combined with other programs in the Faculties of Arts and Social Sciences and Public Affairs and Management. The B.A. in Biology places less emphasis on support from the physical sciences, but allows students to relate their knowledge of biology to other disciplines in the arts or social sciences in a three-year program. The B.A. (Honours) program allows the development of particular interests in depth and initiates the student into research in the field, laboratory or library. Generally, the Honours degree is a prerequisite for admission to graduate programs and is an advantage for those planning a professional career in teaching or administration in biology, including the health sciences, agriculture and environmental science.

The Combined B.A. (Honours) and Combined B.A. programs allow the simultaneous specialization in Biology and one of the arts or social sciences. Because of the social and cultural impact of science and technology, interdisciplinary combinations such as Biology and Economics, Geography, History, Journalism, Law, Philosophy, Political Science, Psychology, Religion or Sociology-Anthropology should better qualify one to grapple with demography, biogeography and the environment and legal implications of pollution and biomedical engineering, science policy, comparative psychology, social evolution, and the historical, philosophical and spiritual implications of current biological knowledge.

It is desirable to enter an Honours program as soon as possible, to ensure that the sequence of selected courses will conform to degree requirements. (See p. 78). Students pursuing the programs must arrange their courses in consultation with the Undergraduate Adviser of the department or departments according to one of the patterns outlined below.

In accordance with the regulations of the B.A. program (p. 78), B.A. (Honours) Biology students must have a minimum of 8.0 Biology credits, and can offer a maximum of 12.0 Biology credits counting towards the 20.0 required credits for the B.A. (Honours) degree. B.A. Biology students must have a minimum of 6.0 Biology credits, and can offer a maximum of 8.0 Biology credits counting towards the 15.0 credits required for the B.A. degree.

## B.A. (Honours) Biology

20.0 credits to include:

1. 8.0 Biology credits to include Biology 61.103★, 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.325★ or 61.335★, 3.0 additional Biology credits (at least 1.0 credit at the 400 level);
2. Chemistry 65.100;
3. 2.0 additional Science credits not in Biology, including one at the 200-level or above;
4. 6.0 arts or social science credits including at least 2.0 at the 200-level or above;
5. 1.0 credit at the 300- or 400-level approved by the Undergraduate Adviser;
6. 1.0 additional credit;
7. An Honours project (Biology 61.497 or 61.498).

## Combined B.A. (Honours) Biology

20.0 credits to include:

1. 6.0 Biology credits to include Biology 61.103★, 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, 2.5 additional Biology credits (at least 1.0 credit at the 400-level);
2. Chemistry 65.100;
3. 2.0 additional Science credits not in Biology, including one at the 200-level or above;
4. At least 7.0 arts or social science credits to include at least 6.0 credits from another department as a requirement for the combined B.A. (Honours) program;
5. An Honours project (Biology 61.497 or 61.498, or equivalent from the student's other Honours department);
6. 3.0 additional credits.

## B.A. Biology

15.0 credits to include:

1. 6.0 Biology credits: Biology 61.103★, 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, 2.5 additional Biology credits;
2. Chemistry 65.100;
3. 1.0 additional Science credit not in Biology;
4. At least 4.0 arts and social science credits;
5. 2.0 additional credits, one of which must be at the 200-level or above.

## Combined B.A. Biology

15.0 credits to include:

1. 5.0 Biology credits: Biology 61.103★, 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, 1.5 additional Biology credits;
2. Chemistry 65.100;
3. 1.0 additional Science credit not in Biology;
4. The requirement for a Combined B.A. program in the Faculty of Arts and Social Sciences;
5. 2.0 or 3.0 additional credits.

## Notes on Programs

1. Students who have completed a credit for either Biology 61.100, 61.101 or 61.102, or the combination of 61.209★ with 61.230★, will be able to use this credit to replace Biology 61.103★ and 61.104★.



Students who have completed only Biology 61.230★, will be able to replace Biology 61.103★.

Students who have completed only Biology 61.209★, must take Biology 61.103★ and 61.104★ before taking advanced Biology courses with laboratories. Biology 61.209★ will then be credited as a Biology elective.

Students who have completed Biology 61.102 and 61.209★ (or 61.230★), will be able to replace Biology 61.103★, 61.104★ with 61.209★ (or 61.230★), plus an additional half credit Biology elective. Biology 61.102 will be credited as an 'additional science' course.

Students who have completed Biology 61.102, 61.209★ and 61.230★, will be able to replace Biology 61.103★, 61.104★ with 61.209★ and 61.230★. Biology 61.102 will be credited as an 'additional science' course.

2. It is important to take Biology 61.220★ in Second year; it is a critical prerequisite for other courses.

3. Students are strongly advised to register in Chemistry 65.100 in their First year, providing they have the OAC, or equivalent, in Chemistry. Students entering without the OAC Chemistry, or equivalent, should register in Chemistry 65.010 in their First year and Chemistry 65.100 no later than their Second year. This early registration in Chemistry is emphasized because Chemistry 65.100 is a prerequisite for Biology 61.220★.

4. Students who have taken Mathematics 69.106★ may use it as a free option or a 100-level Science option.

5. It is recommended that students obtain advice from the Undergraduate Adviser on which Mathematics option (69.117★ or 69.257★) is best suited to their future plans.

6. In choosing additional Science courses above the 100-level and not in Biology, students may select from the Science Continuation courses listed on p. 118. Suggested courses include Biochemistry 63.310, 63.305★, 63.401★, 63.402★, 63.404★, 63.406★, 63.407★; Chemistry 65.211★, 65.212★, 65.223★, 65.224★, 65.321★, 65.322★; Geology 67.231★, 67.236★; Mathematics 69.257★; Computer Science 95.107★, 95.108★; Geography 45.210; Psychology 49.220★, 49.270★. In addition, Mathematics 69.207★, 69.208★, Physics 75.291★, 75.292★ are suggested for some students.

7. Biology Major and Honours students (except students in the B.A., Combined B.A., B.A. (Honours) and Combined B.A. (Honours) programs) may use Technology, Society, Environment 59.300, 59.401★ or 59.402★ in fulfilling the degree requirements, but only as a free option.

If the department cannot find a supervisor for a student who has applied to register for Biology 61.498, *Honours Research Thesis*, then Biology 61.497, *Independent Study*, will be accepted as a replacement. Under such an exceptional circumstance the Department Chair will direct a student to replace Biology 61.498, *Honours Research Thesis* with Biology 61.497, *Honours Essay and Research Proposal*.

## Graduate Program

The Department of Biology offers programs of study and research leading to M.Sc. and Ph.D. degrees in molecular and cellular biology, microbiology, plant and animal physiology, ecology and systematics. Details will be found in the *Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Notes: More detailed information regarding Biology courses taken in Second and later years, and topics for Honours research projects (61.498), may be obtained from *Outlines of Advanced Bi-*

*ology and Biochemistry courses to be offered in the Fall/Winter Session 1998-1999 and Suggested Topics for Biology 61.498 Research Projects 1998-99.* These information booklets may be obtained from the College of Natural Science Administrative Office. All students are strongly advised to consult these information booklets when planning their future course patterns.

Students should note that Biology 61.103★ and 61.104★ are intended primarily for students wishing to major in Biology or take a Science degree. Other students who wish to take Biology courses should consider Biology 61.192★, 61.193★ and/or 61.216★.

### Biology 61.103★

#### Introductory Biology I

A lecture and laboratory course focusing on the cell. The course emphasizes the organization of cells, cellular metabolism, classical and molecular genetics and the reproduction of cells and organisms.

Precludes additional credit for Biology 61.100, 61.102, or the combination of 61.209★ and 61.230★.

Prerequisite: OAC Biology (or equivalent), or OAC Chemistry (or equivalent), or Chemistry 65.010.

Lectures three hours a week, laboratory and/or tutorial three hours a week.

### Biology 61.104★

#### Introductory Biology II

A lecture and laboratory course focusing on organisms and populations. The course emphasizes diversity of life forms, evolution and ecology.

Precludes additional credit for Biology 61.100, 61.102, or the combination of 61.209★ and 61.230★.

Prerequisite: Biology 61.103★ or equivalent.

Lectures three hours a week, laboratory and/or tutorial three hours a week.

### Biology 61.192★

#### Natural History

A course designed primarily for students in non-Biology programs to investigate the natural history of plants and animals, and the communities in which they occur. Particular attention is paid to the Ottawa region, but appropriate examples from other locales are also included.

This course is acceptable only as a Free Elective in all Science programs and B.A. Biology programs.

Lectures three hours a week.

### Biology 61.193★

#### The Natural History of Ontario

A study of Ontario's biodiversity. In addition to examining the makeup of the different communities of plants and animals found in Ontario, the course explores their adaptations to the forces that influence their distribution. This course is acceptable only as a Free Elective in all science programs and B.A. Biology programs.

Prerequisite: Biology 61.192★.

Lectures three hours a week.

### Biology 61.201★

#### Animals: Form and Function

An investigation of invertebrates and vertebrates to relate their structure, function, behaviour and interactions with plants.

Precludes additional credit for Biology 61.200.

Prerequisites: Biology 61.103★ and 61.104★ or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

### Biology 61.202★

#### Plants: Form and Function

An introduction to the structure and development of higher plants (at molecular, cellular and organism levels) discussed in relation to their function.

Precludes additional credit for Biology 61.200.

Prerequisites: Biology 61.103★ and 61.104★ or permission of the Department.

Lectures three hours a week, laboratory and/or tutorial three hours a week.



**Biology 61.214★****Introductory Genetics**

A lecture and laboratory course on the mechanisms of inheritance and the nature of gene structure, composition and function. It introduces both classical Mendelian genetics and modern molecular genetics.

Precludes additional credit for Biology 61.215. Credit for Biology 61.216★ will only be given if taken before Biology 61.214★.

Prerequisites: Biology 61.103★ and 61.104★ or permission of the Department.

Lectures three hours a week, laboratory and/or tutorial three hours a week.

It is strongly recommended that this course be taken by Biology Majors in their Second year of study (see Chart, p. 154).

**Biology 61.216★****Human Genetics and Evolution**

Designed for students interested in learning about the genetic mechanisms involved in human development (embryogenesis, reproduction and aging), diseases, cancer, behaviour, environmental adaptation and evolution.

Not a Science continuation course. Available to students in a Biology or other Science program only as free elective, but credit will be given for Biology 61.216★ only if taken before 61.214★ or 61.215.

Prerequisite: A general biology course at the OAC level or equivalent.

Lectures three hours a week.

**Biology 61.220★****Cell Physiology and Biochemistry**

A lecture and laboratory course on cellular functions and their inter-relationships. It introduces topics including thermodynamics, membrane structure and function, transport mechanisms, basic metabolic pathways, energy production and utilization, communications between cells. (Listed as Biochemistry 63.220★ for students enrolled in the Biochemistry and Biochemistry/Biotechnology programs.)

Prerequisites: Biology 61.103★ and 61.104★, Chemistry 65.100 or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

It is strongly recommended that this course be taken by Biology Majors and Honours students in their Second year of study. (See Chart, p. 154.)

**Biology 61.233★****Microbiology**

The biology of the Bacteria, Archaea, Viruses and Protozoans, from the fundamentals of cell chemistry, molecular biology, structure and function, to their involvement in ecological and industrial processes and human disease.

Precludes additional credit for Biology 61.331★.

Prerequisite: Biology 61.103★ or Chemistry 65.100★ or Chemistry 65.111★.

Lectures three hours a week.

**Biology 61.260★****Introduction to Ecology**

How the physical and biotic environments affect the distribution, abundance and evolution of life, and the importance of ecological ideas in improving understanding of our impact on the environment. The laboratory includes field and computer exercises.

Precludes additional credit for Biology 61.360★ and 61.261★.

Prerequisites: Biology 61.103★ and 61.104★ or 61.100, or permission of the Department.

Lectures three hours a week, laboratory and/or tutorial three hours a week.

**Biology 61.299★****Co-operative Work Term Report**

Practical experience for students enrolled in the Co-operative Option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written reports describing the work term project will be required. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Biology Co-operative Option and permission of the Department.

Four-month work term.

**Biology 61.304★****Insect Diversity**

An introductory field, laboratory, seminar and lecture course on sampling, identification, diversity and biology of insects. Designed for anyone who will use insects in any teaching, research or natural history capacity.

Precludes additional credit for Biology 61.461.

Prerequisites: Biology 61.201★.

Lectures two hours a week, laboratory four hours a week.

**Biology 61.311★****Mycology**

The morphology, evolution and biological importance of the fungi.

Prerequisites: Biology 61.103★ and 61.104★.

Lectures two hours a week, laboratory four hours a week.

**Biology 61.314★****Molecular Genetics**

A lecture course dealing with modern advances in molecular genetics.

Precludes additional credit for Biology 61.215.

Prerequisite: Biology 61.214★ or permission of the Department.

Lectures three hours a week.

**Biology 61.321★****Cell Biology**

A lecture and laboratory course on the structure, composition, function and development of eukaryotic cells and their organelles.

Precludes additional credit for Biology 61.221★.

Prerequisites: Biology 61.214★, 61.220★, 61.314★, or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

**Biology 61.325★****Plant Biochemistry and Physiology**

A lecture and laboratory course consisting of selected topics in metabolism and physiology of plants, including photosynthesis, nutrient uptake and transport, intermediary and secondary metabolism, germination, growth and development.

Prerequisites: Biology 61.202★ and either Biology 61.220★ or Chemistry 65.220; or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

**Biology 61.333★****Experimental Microbiology**

Intensive training in laboratory techniques in microbiology, using bacteria and other microorganisms to demonstrate processes of cell growth, metabolism, gene expression, rapid evolution, gene transfer, microbial community dynamics and interactions with other organisms.

Precludes additional credit for Biology 61.331★.

Prerequisites: Biology 61.220★ and 61.233★ (may be taken concurrently), or permission of the Department.

Laboratory five hours a week.

**Biology 61.335★****Animal Physiology**

The properties of physiological systems and components of animals with emphasis on their physico-chemical bases.

Prerequisites: Biology 61.220★ or Chemistry 65.210. Physics 75.105, or 75.101★ and 75.102★ and Mathematics 69.107★ and 69.117★ or 69.257★ are strongly recommended.

Lectures three hours a week, laboratory four hours a week.

**Biology 61.351★****The Biophysics of Animal Movement**

Topics include the properties of muscles, tendons, bones, joints and the co-ordinated use of these structures. Human locomotion and fitness, bird flight, especially the soaring of the vulture and the albatross, and animal migration are covered in detail.



Prerequisites: Biology 61.220★ or Chemistry 65.211★ and Physics 75.101★ and 75.102★ or 75.107★ and 75.108★ or permission of the Department.  
Lectures three hours a week, tutorial or seminar one hour a week.

#### Biology 61.361★

##### **Ecosystem Ecology**

A course utilizing the concepts presented in Biology 61.260★ and selected ecological experiments to analyze ecosystem types and the major factors that characterize them.

Prerequisite: Biology 61.260★.

Lectures three hours a week, laboratory four hours a week.

#### Biology 61.362★

##### **Conservation Biology**

The science of biology as applied to the problem of maintaining species diversity. Topics include: history of conservation biology, valuation of species, indices of biodiversity, extinction, conservation genetics, conservation planning in parks and reserves, landscape ecology and case studies of conservation problems.

Prerequisite: Biology 61.260★ or permission of the Department.

Lectures three hours a week and laboratory/workshop three hours a week.

#### Biology 61.364★

##### **Analysis of Ecological Relationships**

Introduction to the analysis of ecological data. Students analyse real ecological data sets in weekly laboratory sessions. Methods introduced include simple linear, polynomial, and multiple regression analysis, analysis of variance, nonparametric tests, tests of independence and logistic regression analysis.

Prerequisites: Biology 61.260★ and Mathematics 69.257★. For students in the Environmental Engineering program, Engineering 81.202, 81.302★, and Mathematics 69.352★, which may be taken concurrently.

Workshops four hours a week.

#### Biology 61.365★

##### **Field Course I**

An intensive study of living organisms under natural conditions. Credit is based on two weeks of full-time field work with attendant assignments. A wide range of modules is available. Transportation and room and board costs are borne by the student. (Also listed as Psychology 49.323★, for animal behaviour modules only.)

Students make take both 61.365★ and 61.366★ for credit, but neither may be used to repeat a particular module.

Prerequisites: At least one course in Biology beyond the 100-level and written permission of the Department.

All day, approximately six days a week.

#### Biology 61.366★

##### **Field Course II**

An intensive study of living organisms under natural conditions. Credit is based on two weeks of full-time field work with attendant assignments. A wide range of modules is available. Transportation and room and board costs are borne by the student. Students may take both Biology 61.365★ and 61.366★ for credit, but neither can be used to repeat a particular module.

Prerequisites: At least one course in Biology beyond the 100-level and written permission of the Department.

All day, approximately six days a week.

#### Biology 61.381★

##### **Plants and Herbivores**

This course explores the chemical, physiological, ecological and evolutionary interactions that underlie the relationship between plants and their insect herbivores.

Prerequisites: Biology 61.201★ and 61.202★.

Lectures/seminars three hours a week.

#### Biology 61.382★

##### **Animal Behaviour**

Advanced study of animal behaviour. Topics such as predator-prey interactions, mating behaviour, migration, mother-young interactions and social behaviour interpreted in an ecological context.

Precludes additional credit for Biology 61.481★.

Prerequisites: Biology 61.201★, and 61.260★ (may be taken concurrently), or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

#### Biology 61.391★

##### **Biology in Society**

A seminar half-credit course dealing with selected areas of biological knowledge with direct relevance to social activities of man. Not available as a continuing Science course for students other than Biology Majors except with permission of the student's Major department.

Prerequisites: Biology 61.201★, 61.202★, 61.214★ or permission of the Department.

Lectures/seminars/discussions, three hours a week.

#### Biology 61.399★

##### **Co-operative Work Term Report**

Practical experience for students enrolled in the Co-operative Option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written reports describing the work term project will be required. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Biology Co-operative Option and permission of the Department.

Four-month work term.

#### Biology 61.408★

##### **Plant Development**

A lecture course dealing with recent advances in our understanding of plant development.

Precludes additional credit for Biology 61.410.

Prerequisite: Biology 61.202★ or permission of the Department.

Lectures and seminars, three hours a week.

#### Biology 61.409★

##### **Techniques for the Experimental Study of Plant Structure**

A practical course in which students have the opportunity to learn and evaluate modern techniques used in the study of plant structure by optical microscopy.

Precludes additional credit for Biology 61.410.

Prerequisite: Biology 61.202★ or permission of the Department.

Laboratory five hours a week.

#### Biology 61.412★

##### **Molecular Ecology**

The interface of molecular biology, ecology and population biology. Topics include experimental design and a survey and critique of molecular genetic methods to study ecology.

Prerequisite: Biology 61.214★ and 61.260★; 61.314★ or one of 61.361★, 61.362★ (may also be taken concurrently); or permission of the Department.

#### Biology 61.413★

##### **Population Genetics**

Basic ideas of population structure, equilibrium, selection mutation, genetic drift.

Precludes additional credit for Biology 61.418.

Prerequisite: Biology 61.214★ or permission of the Department. A course in statistics is highly recommended.

Lectures and seminars three hours a week.

#### Biology 61.414★

##### **Evolutionary Genetics**

A continuation of Biology 61.413★ dealing with molecular evidence of evolution, speciation as well as the analysis of biometrical traits.

Precludes additional credit for Biology 61.418.

Prerequisite: Biology 61.413★ or permission of the Department. A course in statistics is highly recommended.

Lectures and seminars three hours a week.

#### Biology 61.416★

##### **Methods in Molecular Genetics**

The scope and purpose of the course is to review the use of innovative genetic manipulation techniques for the successful solution of problems in molecular biology. The course is suitable for students with a developing interest in problems of molecular and



cellular biology and biochemistry.

Precludes additional credit for Biology 61.417.

Prerequisites: Biology 61.214★ and 61.314★ or 61.215 and 61.331★ or equivalent and a course in Biochemistry or permission of the Department.

Lectures two hours a week.

Biology 61.419★

#### **Laboratory Techniques In Molecular Genetics**

This laboratory course is complementary to Biology 61.416★. It is designed to give the student some practical familiarity with methodology in molecular genetic techniques. The laboratory is suitable for students with a developing interest in problems of molecular and cellular biology and biochemistry.

Precludes additional credit for Biology 61.417.

Prerequisites: Biology 61.331★ and 61.416★ or equivalent and a course in Biochemistry or permission of the Department. Enrolment limited.

Lecture/laboratory six hours a week in two sessions.

Biology 61.421★

#### **Cell Biology**

An advanced course dealing with the current state of knowledge of the structure, molecular organization, reproduction and functions of eukaryotic cells and their organelles.

Precludes additional credit for Biology 61.424.

Prerequisites: Biology 61.221★ or 61.321★; either Biochemistry 63.310 or Biology 61.314★, or permission of the Department.

Lectures and seminars three hours a week.

Biology 61.422★

#### **Mutagenesis and DNA Repair**

A molecular study of mutagenesis and DNA repair. Topics will include DNA structure perturbations, spontaneous and induced mutagenesis, the genetics and biochemistry of DNA repair and recombination, and the role of mutagens in the development of genetic disease and cancer. (Also listed as Biochemistry 63.422★.)

Prerequisites: Biology 61.220★ (or 63.310 taken concurrently) or 61.314★; or permission of the Department.

Lectures two hours a week and workshop two hours a week.

Biology 61.424★

#### **Plant Physiological Ecology**

Physiological mechanisms for the acquisition of carbon, water and nutrients in plants adapted to a variety of environments. Particular emphasis on studying mechanisms for acclimation/adaptation to variation in environmental conditions.

Prerequisites: Biology 61.202★, Biology 61.325★, or permission of the Department.

Lectures and seminars three hours a week.

Biology 61.429★

#### **Advanced Plant Physiology**

An advanced course dealing with recent developments in selected topics of plant physiology.

Precludes additional credit for Biology 61.425.

Prerequisites: Biology 61.325★ and Chemistry 65.223★, 65.224★ or permission of the Department.

Lectures/discussion three hours a week.

Biology 61.430★

#### **Applied and Environmental Microbiology**

Studies of microbial ecology, physiology, biochemistry and genetics as they apply to microorganisms and microbial communities functioning in natural, agricultural and industrial environments.

Prerequisites: Biology 61.331★, Biochemistry 63.310; or permission of the Department.

Lectures and tutorial three hours a week.

Biology 61.431★

#### **Current Topics in Biotechnology**

Explorations of developing biotechnologies in areas such as microbial products, protein engineering, plant genetic engineering, environmental remediation, pharmaceuticals production and medical diagnostics and therapy.

Prerequisites: Biology 61.331★, Biochemistry 63.310; or permission of the Department.

Lectures and tutorials three hours a week.

Biology 61.432★

#### **Immunology**

The organization and function of the immune system. The anatomy of the immune system, and the molecular and genetic bases of the immune response. The laboratory deals with applications of animal cell culture in studies of immune cells and their products. (Also listed as Biochemistry 63.432★.)

Prerequisites: Biology 61.221★ or 61.321★; or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.435

#### **Animal Physiology**

A course dealing in some detail with recent advances made in particular areas of neurophysiology.

Prerequisites: Biology 61.335★, Chemistry 65.223★ and 65.224★, and Physics 75.107★ and 75.108★, or 75.101★ and 75.102★, or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.463★

#### **Insect Evolution and Biology**

Major questions on the origin, evolution and adaptation of structures and physiology of terrestrial arthropods, especially insects.

Precludes additional credit for Biology 61.460.

Prerequisite: Biology 61.304★, or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.469★

#### **Evolutionary Concepts**

Evolution as related to gene pools, isolation, speciation, natural selection, competition, dominance, and distributional patterns;

examples from North American biota are emphasized.

Prerequisites: Biology 61.260★ or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.482★

#### **Advanced Animal Behavior**

Contemporary issues in behavioral ecology. Issues could include the relevance of behavioral ecology to conservation biology, to new insights into human social behavior, and will be selected through consultation between professor and students.

Prerequisites: Biology 61.382★ or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.490

#### **Directed Special Studies and Seminar**

Permission of the Department.

Biology 61.491★

#### **Directed Special Studies**

Independent or group study, open to Third and Fourth year students to explore a particular topic, in consultation with a Faculty supervisor. May include directed reading, written assignments, tutorials, laboratory or field work.

Prerequisite: Permission of the Department. Students normally may not offer more than a total of 1.0 credit of Directed Special Studies in their program.

Biology 61.497

#### **Honours Essay and Research Proposal**

An independent research study using library resources. The candidate prepares a critical review and research proposal of a topic approved in consultation with a Faculty advisor. Evaluation will be based on these written submissions and an oral defence.

Precludes additional credit for Biology 61.498.

Prerequisite: Fourth-year standing in an Honours Biology program and permission of the Department.

Biology 61.498

#### **Honours Research Thesis**

An independent research project undertaken in the field and/or the laboratory, under the direct supervision of a Faculty adviser. The candidate prepares a written thesis and is orally examined by a faculty committee after the thesis has been presented for examination.

Precludes additional credit for Biology 61.497.

Prerequisites: Biology 61.491★ (may be taken concurrently), and permission of the Department. Open only to B.Sc. Honours stu-



dents, and B.A. Biology Honours students (depending on their laboratory experience and with permission from the Chair of the Department, in their Fourth year.

Biology 61.499

**Co-operative Work Term Report**

Practical experience for students enrolled in the Co-operative Option To receive course credit students must receive satisfactory evaluations from their work term employer. Written reports describing the work term project will be required. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Biology Co-operative Option and permission of the Department.  
Four-month work term.

# Biotechnology (Science)

583 Tory Building  
Telephone: 520-3889  
Fax: 520-4497

## Academic Administration

**Biotechnology Co-ordinators,**  
**Biology:** I.B. Lambert • **Biochemistry:** J. Sinclair

### General Information

Biotechnology is concerned with the design, modification and controlled use of living organisms and their metabolic systems to carry out a wide range of useful processes in agriculture, manufacturing and service industries. This is an important and growing field for the application of biological studies to industrial, commercial, agricultural and environmental problems. Important areas include fermentation and enzyme technology, genetic engineering and other cellular manipulations.

### Biotechnology at Carleton

A number of scientists at Carleton carry out research in topics related to biotechnology. Some areas currently under investigation include:

- metabolic engineering and applied microbiology;
- genetic engineering;
- natural products for biological control;
- cell and tissue culture technology.

By completing a particular pattern of options in Biology or Biochemistry, undergraduates interested in careers in this expanding area can qualify for an Honours B.Sc. in Biology and Biotechnology, or in Biochemistry and Biotechnology. These programs provide the basic grounding in biology and chemistry, yet allow inclusion of specialized courses related to biotechnology. The biology version allows for more emphasis at the cell and organizational level, while the biochemistry version has a greater concentration at the molecular level. One of the requirements is completion of an Honours research project in a topic related to current studies in biotechnology. In special cases, students may carry out the project in a local laboratory outside of the University, with joint supervision by a faculty member and an outside scientist. When possible, special courses will be offered in subjects of direct application in biotechnology.

Courses required for the Biotechnology designation (in addition to other program requirements) include: Organic Chemistry (Chemistry 65.223★ and 65.224★), General and Industrial Biochemistry (Biochemistry 63.305★, 63.310, 63.404★), Cell Biology (Biology 61.321★), Microbiology (Biology 61.233★), Molecular Genetics and/or Cell Biology (selected from Biology 61.416★, 61.419★, 61.421★, 61.432★) and Biotechnology (Biology 61.430★ or 61.431★).

For information on course patterns, students entering these programs with, or without, the OAC in Biology should refer to p. 155 for complete information.

### Honours in Biology and Biotechnology

Course requirements are 20.0 credits, in a pattern approved by the appropriate Biotechnology Co-ordinator:

1. 8.0 Biology credits: Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.233★, 61.314★, 61.321★, either 61.325★ or 61.335★, one of 61.430★ or 61.431★; 1.0 credit from 61.416★, 61.419★, 61.421★, or 61.432★; 61.491★; 1.0 credit Biology option.
2. 2.0 Biochemistry credits: Biochemistry 63.310, 63.305★, 63.404★.
3. 2.0 Chemistry credits: Chemistry 65.100, 65.223★ and 65.224★.
4. 1.0 Physics credit: Physics 75.101★ and 75.102★, or 75.107★ and 75.108★.
5. 1.5 Mathematics credits: Mathematics 69.107★, 69.117★, 69.257★.
6. 1.5 credits to be chosen from Biology 61.416★, 61.419★, 61.421★, 61.422★, 61.430★, 61.431★, 61.432★; Biochemistry 63.401★, 63.402★, Chemistry 65.211★, 65.370★, Technology, Society, Environment 59.401★, and 59.402★. In special cases, other advanced Science courses may be approved by the Biotechnology Co-ordinator.
7. 2.0 approved arts or social science credits.
8. 1.0 free option credit.
9. A research project (Biology 61.498) in an area approved by the Biotechnology Co-ordinator.

### Honours in Biochemistry and Biotechnology

Course requirements are 20.0 credits, in a pattern approved by the appropriate Biotechnology Co-ordinator:

1. 4.5 Biology credits: 61.103★, 61.201★ or 61.202★, 61.214★, 61.314★, 61.233★ or 61.331★, 61.321★, either 61.325★ or 61.335★, and 1.0 credit chosen from 61.416★, 61.419★, 61.421★, 61.430★ and 61.431★.
2. 4.5 Biochemistry credits: 63.220★ or equivalent, 63.305★, 63.310, 63.401★, 63.498 and 1.0 credit chosen from 63.402★, 63.404★, 63.405★, 63.406★, 63.407★, 63.422★, 63.432★.
3. 4.5 Chemistry credits: 65.100, 65.211★, 65.223★, 65.224★, 65.233★, 65.321★, either 65.322★ or 65.325★, and 65.353★.
4. 1.0 Physics credit: 75.101★ and 75.102★, or 75.107★ and 75.108★.
5. 1.5 Mathematics credits: 69.107★, 69.117★, and 69.257★.
6. 1.0 credit chosen from the Biochemistry courses listed in 2. above, Biology 61.201★, 61.202★, 61.325★, 61.335★, 61.416★, 61.419★, 61.421★, 61.429★, 61.430★, 61.431★, Chemistry 65.212★, 65.322★, 65.325★, 65.370★, 65.380★. In special cases, other advanced Science courses may be approved by the Director.
7. 2.0 approved arts or social science credits.



8. 1.0 free-option credit or 0.5 credit if Biology 61.102 is taken in lieu of the OAC in Biology.

*Notes on Programs*

1. In the Biology/Biotechnology program, "Honours Subjects" used for calculation of Honours GPAs include all courses taken in Biology and Biochemistry.

2. In the Biochemistry/Biotechnology program, "Honours Subjects" used for calculation of Honours GPAs include all courses taken in Biochemistry, plus the Biology and Chemistry courses fulfilling requirements 1, 3 and 6 above.

3. In choosing a program, students should consider the prerequisites for any courses that they may wish to take in later years; in particular some options listed in requirements 1 and 6, above, may be offered only in alternate years and may require as prerequisites for one or other of Biology 61.325★ and 61.335★. Because of timetable constraints students may have to take Chemistry 65.211★ and Biology 61.201★ or 61.202★ in different years.

4. Credit will not be given for Biology 61.220★ or Biochemistry 63.220★ taken after Biochemistry 63.310 or equivalent.

5. A completed credit for Biology 61.100, 61.102 or 61.209★ and 61.230★ may replace the requirement for Biology 61.103★ and 61.104★. Students who have completed only Biology 61.230★ may replace 61.103★ with 61.230★. Students who have completed only 61.209★ must pass 61.103★ and 61.104★; Biology 61.209★ may then be credited as a Biology elective.

6. Students who wish to take 61.214★ in the Winter term of their first year must obtain a grade of C- or better in 61.103★.

**Typical Course Patterns**

**Biology and Biotechnology**

*First Year*

Biology 61.103★ and 61.104★;  
Chemistry 65.100;  
Physics 75.101★, and 75.102★ or 75.107★ and 75.108★;

Mathematics 69.107★, 69.117★;  
1.0 credit, arts or social science option.

*Second Year*

Biology 61.201★, 61.202★, 61.214★, 61.220★, 61.331★; 0.5 credit Biology option;  
Chemistry 65.223★ and 65.224★;  
1.0 credit, arts or social science option.

*Third Year*

Biology 61.314★, 61.321★, 61.325★, 61.335★, 0.5 credit Biology option;  
Biochemistry 63.310 and 63.305★;  
Mathematics 69.257★;  
0.5 credit, free option.

*Fourth Year*

1.0 credit from Biology 61.416★, 61.419★, 61.421★, 61.432★;  
1.0 advanced option credit (see 6 above);  
Biochemistry 63.404★;  
Biology 61.430★ or 61.431★;  
Biology 61.491★ and 61.498;  
0.5 credit, free option.

**Biochemistry and Biotechnology**

*First Year*

Biology 61.103★ and 61.104★;  
Chemistry 65.100;  
Physics 75.101★ and 75.102★, or 75.107★ and 75.108★;  
Mathematics 69.107★, 69.117★;  
1.0 credit, arts or social science option.

*Second and subsequent years*

Students are advised to plan their programs for a least second and third year simultaneously. Thus a choice between 61.201★ and 61.202★ in second year determines whether 61.325★ or 61.335★ can be taken in third year. Students should also note that 65.223★ and 65.224★ are prerequisites for mandatory courses while 65.211★ is not.

# Business

## (Public Affairs and Management)

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710 Dunton Tower  
Telephone: 520-2388

### Academic Administration

Director, V. Kumar

Supervisor of Graduate Studies, A. Srivastava

Supervisor of Honours Programs, A. Clarke-Okah

Supervisor, International Programs, I. Lee

Supervisor, Professional Development, W. Lawson

### Teaching Staff

#### Professors

**Linda Duxbury**, B.Sc., M.A.Sc., Ph.D. (Waterloo) • **Donald Gerwin**, B.S. (Carnegie-Mellon), M.S. (Case Western Reserve), Ph.D. (Carnegie-Mellon) • **George H. Haines, Jr.**, S.B. (Massachusetts Institute of Technology), M.S., Ph.D. (Carnegie Institute of Technology) • **Louise A. Heslop**, B.H.Sc., M.Sc. (Guelph), Ph.D. (Western Ontario) • **Vijay M. Jog**, B.Eng. (Birla Institute), M.Eng., M.B.A., Ph.D. (McGill) • **Gregory E. Kersten**, M.A., Ph.D. (Central School of Planning and Statistics, Warsaw) • **Moses N. Kiggundu**, B.A. (Makerere), M.B.A. (Alberta), Ph.D. (Toronto) • **Uma Kumar**, B.Sc. (Agra), M.Sc. (I.I.T. at Kanpur, Manitoba), Ph.D. (I.I.T. at Kanpur) • **Vinod Kumar**, B.Sc. (Agra), B.Eng. (Roorkee), M.Eng. (California at Berkeley), Ph.D. (Manitoba), P.Eng. • **Wojciech Michalowski**, M.Sc., Ph.D. (Central School of Planning and Statistics, Warsaw) • **Nicolas Papadopoulos**, B.B.A. (Athens Graduate School of Economics and Business), M.B.A. (Washington State), D.B.A. (Athens) • **A.L. Riding**, B.Eng., M.Eng. (McGill), M.B.A. (Sir George Williams), Ph.D. (McGill) • **D. Roland Thomas**, B.Sc. (Imperial College), M.Sc. (Carleton), Ph.D. (Imperial College)

#### Associate Professors

**A.J. Balletti**, B.S. (Univ. National de Ingenieria), M.B.A., Ph.D. (Cincinnati) • **John R. Callahan**, B.Sc. (Carleton), M.A., Ph.D. (Toronto) • **Deborah R. Comeau**, B.A., Ph.D. (Western Ontario) • **David Cray**, B.A. (New College), M.S., Ph.D. (Wisconsin) • **Lorraine Dyke**, B.A. (Ottawa), M.B.A., Ph.D. (Queen's) • **Oscar Hauptman**, B.Eng., M.Sc. (Technion), Ph.D. (Massachusetts Institute of Technology) • **W.M. Lawson**, B.Sc. (McGill), M.B.A. (Western Ontario), M.A.Sc. (Waterloo), Ph.D. (York) • **Judith J. Madill**, B.H.Sc., M.Sc. (Manitoba), Ph.D. (Western Ontario) • **Siva Pal**, B.E. (Burdwan), M.S. (Wayne State), M.A. Sc., Ph.D. (Waterloo), P.Eng. • **Ashwani K. Srivastava**, B.Eng. (Birla Institute of Technology and Science), M.B.A. (Concordia), Ph.D. (Toronto)

#### Assistant Professors

**Ian Lee**, B.A., M.A., Ph.D. (Carleton) • **Bruce McConomy**, B.Com., Ph.D. (Queen's), C.A.

#### Instructors

**Ann Clarke-Okah**, B.A. (Simon Fraser), Cert. Admin. (Brock), C.A. • **Anna L. Gibbons**, B.A., B.Ed., M.B.A. (Ottawa) • **J.D. Herauf**, B.Com. (Saskatchewan), C.A., C.G.A. • **Jacques Maurice**, B.Adm. (Ottawa), C.A., C.M.A. • **Lorna Unger**, B.A. (Manitoba), M.A. (Carleton)

#### Adjunct Professors

**C. Hobbs**, Carleton University • **F. Kirk**, Carleton University • **W. L. Weber**, Carleton University

#### Adjunct Research Professors

**C. Higgins**, University of Western Ontario • **I. Kaliszewski**, Systems Research Institute • **G. R. Mallory**, Open University • **Darren B. Meister**, Queen's University • **Z. Mikolajuk**, IDRC • **L. Moffat**, Carleton University • **Sunil Noronha**, IBM Thomas J. Watson Research Centre • **S. Szpakowicz**, University of Ottawa • **A. Young**, DYI Technologies

### Programs of Study

The School of Business offers two undergraduate degree programs: Bachelor of Commerce with Honours (with or without a Concentration) and Bachelor of International Business with Honours; two graduate degree programs: Master of Management Studies and Doctor of Philosophy in Management; and one Minor in Business for non-business students.

### Bachelor of Commerce with Honours

The Commerce program offers students a variety of ways of tailoring their educational experience and studies to their career objectives. The three basic options are a general Honours Commerce degree, an Honours Commerce degree with Concentration in a selected area (the field of Concentration appearing on the diploma) or an Honours Commerce degree with specialization in a field of interest (the field of specialization is not shown on the diploma).



## Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 82), in addition to all School regulations and requirements as set out below.

## Admission Requirements

### First Year

Students may gain admission to the B.Com. program through one of two ways.

High School applicants must normally have the OSSD, or equivalent, including at least six OACs, with an overall average of 70 percent or better. Of the six OACs, one must be Calculus (with a grade of 60 percent or better), one must be either Algebra/Geometry or Finite Mathematics, and one must be English. For applicants whose first language is not English, the requirement of OAC English can also be met under the conditions outlined in the section "English Language Requirements" on p. 32 of this calendar.

Applicants, who have successfully completed Qualifying-University Year with a GPA of 6.5 or better and a CI of 6.0 or better, who have completed Mathematics 69.007★ and/or 69.017★ (if the corresponding Mathematics OACs or equivalents were not taken), and who offer an OAC English credit or equivalent, may also be admitted to First Year.

Note: Algebra/Geometry is the preferred OAC Mathematics course, and students who do not present this OAC will be required to take the equivalent course from the School of Mathematics and Statistics during their first year.

Students who do not meet the standards required for entry to the B. Com. program may elect to take their First year in the B. A. program. The First year program should include Business 42.101★, and 42.102★, Economics 43.100 or 43.110 and Mathematics 69.109★ and 69.119★. Application may then be made for admission to the Second year of the B.Com. Program.

### Second and Subsequent Years

Applications for admission to the Second or subsequent years will be assessed on their merits. Advanced standing will be granted only for those courses that are determined to be appropriate for the Commerce program. Students must present an Honours Commerce GPA of 6.5 or better, and a CI of 6.00 or better. On admission to the Commerce program, students will not receive credit for courses graded below C-.

## Academic Standing

Academic Standing will be assessed according to the standards and criteria on p. 80 ( 5.2) of this Calendar with the following exception:

Probation is not available to students in the Bachelor of Commerce program.

### Concentration GPA

Students registered in Concentrations are reminded (see 7.5 p. 83) that Concentration GPA establishes eligibility for the Concentration notation on the diploma at the time of graduation. The GPA in a concentration must be 6.5 or better. This GPA shall be calculated over all successfully completed courses (core and optional) that are to meet the requirements specified for the chosen concentration.

### Continuation in the Bachelor of Commerce Program

Probation (as defined in 5.8 of the regulations on p. 81) is not available to students in the Bachelor of Commerce program.

## Credits Earned by Exchange Agreements

Bachelor of Commerce students in good standing may be eligible to study elsewhere on one or more of the many exchange agreements available to undergraduate students. Students who wish to study overseas should contact the Exchange Coordinator at the School of Business for information. Registration for business courses in the Faculty of Administration at the University of Ottawa requires approval of the School of Business and of the appropriate department at the University of Ottawa.

## Credit Requirements

Candidates for the B.Com. degree must take a minimum of 20.0 credits.

Students with a prior university degree will receive advanced standing where appropriate. Acceptance in the program will be governed by the standards required for entry to the Honours program; however, a minimum of 7.0 additional credits will be required, following admission to the program, for the Bachelor of Commerce degree.

Students who propose to include language courses in their program must obtain prior approval from the School.

### Required (Core) Courses

The following is a list of courses that all students in the B.Com. program must take. Individual students may wish to adapt the timing of the courses to meet their own particular needs.

### First Year Courses

Business 42.104★, 42.105★, 42.142★  
Economics 43.100 or 43.110  
Mathematics 69.109★ or 69.107★  
Mathematics 69.119★ or 69.117★  
Psychology 49.100 or Sociology 53.100

### Second Year Courses

Business 42.211★, 42.228★, 42.230★, 42.240★, 42.254★, 42.261★  
Economics 43.202★, 43.212★  
Economics 43.220 or Mathematics 69.266★ and 69.267★

### Third Year Courses

Business 42.313★, 42.317★, 42.330★

### Fourth Year Courses

Business 42.461★;  
All except students of International Business Concentration 42.469★;  
IB Concentration students must take Business 42.479★.  
2.0 additional 400-level credits of which at least 1.0 credit must be selected from courses offered by the School of Business.

## Co-operative Work Term Option

The School offers a Co-operative Work Term Program for B.Com. students. The program provides students with opportunities to integrate academic and applied aspects of management. Work terms are neither mandatory nor for credit, and eligibility for Co-op does not guarantee work placement. To be considered eligible, students must (a) have successfully completed a minimum of 8.5 credits; (b) have an overall GPA of 9.0 or better; (c) be enrolled as a full-time student in the B.Com. Program; and (d) be eligible to work in Canada. Co-operative work terms are four months in length, and commence in September, January and May of each year. Qualified Co-op students can accept no more than two work terms, and may concurrently take no more than 0.5 credit course during each work term. Consecutive work terms may be arranged



at the request of the employer. Only Canadian citizens may apply for co-operative work terms with the Public Service Commission.

## Concentrations

In the Bachelor of Commerce program, a Concentration is a structured set of courses which complements and accents a core business education. Successful completion of a set, along with fulfillment of other requirements of the degree leads to an official notation of a specialization on the diploma and the transcript. The concentrations are designed to meet both the job market and student needs and are open only to students registered in the Bachelor of Commerce program. The requirements for the concentrations vary.

For a Bachelor of Commerce degree with a Concentration, one must successfully complete the set of B.Com. Core Credits, a set of Concentration Core Credits, and Concentration Options (a specified number of courses from a list specifically designed to augment the core courses in a chosen Concentration). The Concentration Core Credits and the Concentration Options will be applied toward the Options requirements for the B.Com. (Honours) degree.

The order in which the courses listed for the Concentrations are taken should be planned in advance. Students are therefore strongly advised to register in their chosen Concentrations, if any, before completing 8.5 credits in the program. To register, students should consult the School's Undergraduate office.

### • Accounting

The Concentration in Accounting is designed to provide a foundation for careers in financial accounting, management accounting and/or auditing. It provides a base for individuals wishing to pursue a professional designation in accounting, including the C.A. (Chartered Accountant), C.M.A. (Certified Management Accountant), and/or C.G.A. (Certified General Accountant) designations. Students interested in these designations should consult with one of the faculty members in accounting.

The Concentration in Accounting requires: 2.0 Concentration Core Credits: 42.201★, 42.202★, 42.301★ and 42.308★. Concentration Options comprise 2.0 credits to be chosen from: 42.255★, 42.305★, 42.400★, 42.401★, 42.402★, 42.407★, 42.408★, 42.440★.

### • Business Operations Analysis

The Concentration in Business Operations Analysis is designed to provide a foundation for students interested in career opportunities in decision support functions, group decision making, and support of business negotiations. Successful completion of the Concentration would satisfy the requirements for the diploma of the Canadian Operational Research Society (CORS), a professional designation. Students interested in pursuing this professional designation should consult with one of the faculty members in this area. The Concentration in Business Operations Analysis requires: 2.0 Concentration Core Credits: Business 42.338★, 42.435★, 42.436★, and 42.446★. Concentration Options comprise 2.0 credits chosen from: 42.242★, 42.327★, 42.340★, 42.437★, 42.447★, 42.460★, 42.466★, 69.353★, 69.354★, 69.357★, 70.460★.

### • Finance

The Concentration in Finance is designed to prepare students to pursue careers in corporate financial management, financial analysis, corporate planning, investment banking, financial services, portfolio management, and financial consulting. The Finance Concentration also provides students with the necessary foundation to pursue a professional designation in Finance such as the C.F.A. (Chartered Financial Analyst). Students registered in the B.Com. program may earn the Bachelor of Commerce with a Concentration in Finance designation by completing 4.0 credits in

addition to the B.Com. core. Of these, 1.0 credit must be: 42.255★ and 42.354★.

Students may complete the remaining 3.0 credits in one of two ways. Those students who wish to focus on *corporate* finance may complete the concentration requirements by taking 42.350★ and 42.450★ and 2.0 credits of options from among: 42.201★, 42.202★, 42.242★, 42.301★, 42.340★, 42.343★, 42.352★, 42.416★, 42.452★, 42.453★, and 42.550. Those students who wish to focus on *financial services* may complete the concentration requirements by taking 42.352★ and 42.452★ and 2.0 credits of options from among: 42.201★, 42.202★, 42.242★, 42.301★, 42.340★, 42.343★, 42.350★, 42.416★, 42.450★, 42.453★, and 42.550.

### • Information Systems

The Concentration in Information Systems is designed to provide a strong managerial and technical foundation for individuals wishing to pursue careers analyzing, designing, implementing and maintaining information systems.

The Concentration in Information Systems requires: 2.5 Concentration Core Credits: 42.242★, 42.340★, 42.343★, 42.344★, 42.440★. Concentration Options comprise 2.0 credits to be chosen from: 42.338★, 42.416★, 42.442★, 42.446★, 42.447★, 42.460★, 42.467★, 59.405★.

### • International Business

The Concentration in International Business is designed to combine the core strength of the B. Comm. program with a solid understanding of international business and management. It requires 2.5 Concentration Core Credits: 42.373★, 42.374★, 42.417★, 42.425★, 42.474★. Concentration Options comprise 2.0 credits: 1.0 Option credit is to be chosen from: Business: 42.352★; 42.354★; 42.361★; 42.416★; 42.464★; 42.530 and 42.531; and, 1.0 credit must be chosen from: Central/East European and Russian-Area Studies 55.405★; Economics 43.361★, 43.362★, 43.370★; Geography 45.220★, 45.329★, 45.344★; Law 51.327★, 51.420★; Political Science 47.260, 47.360★ or other courses with permission of the School.

### • Strategic Human Resources Management

The Concentration in Strategic Human Resources Management is designed to provide a conceptual foundation for students interested in career opportunities in personnel/human resource management, management consulting, and labour/industrial relations. Those interested in professional designations such as the Certified Human Resources Professional (CHRP) and the Comprehensive Provincial Examination (CPE), both offered by the Human Resources Professionals Association of Ontario (HRPAO) should consult one of the faculty members in the area. The Concentration in Strategic Human Resources Management requires: 2.5 Concentration Core Credits: Business 42.312★, 42.413★, 42.414★, 42.415★, 42.416★. Concentration Options comprise 2.0 credits to be chosen from: Business 42.373★, 42.417★, 42.418★, 42.460★, 42.462★, Economics 43.356★, Psychology 49.313★, Law 51.306★, 51.341★, 51.442★ and Sociology-Anthropology 56.358★. Students may also take one of 42.510 or 42.511 with permission from the School.

### • Technology and Operations Management

The Technology and Operations Management Concentration focuses on managing operations in a global economy. It is designed to lay the foundation for careers in hi-tech manufacturing including managing the transfer of new products into manufacturing, full-scale production, and supply and distribution as well as in operations in other manufacturing or in service industries. The Concentration will have an applied focus to provide students with as much practical experience as possible. Students registered in the Bachelor of Commerce program may earn the Bachelor of Commerce with a Concentration in Technology and Operations Management designation by completing 4.0 credits in addition to the



B.Com. core. Of these, 2.0 credits must be: Business 42.332★, 42.333★, 42.447★, and 42.467★. The other 2.0 credits for Concentration Options are to be chosen from: Business 42.308★, 42.338★, 42.334★, 42.416★, 42.444★, 42.435★, 42.460★, 42.561★, 42.571★.

## Bachelor of International Business with Honours

The Bachelor of International Business with Honours is a limited-enrolment program designed to provide depth in both international business studies and in a major language used in international business. In addition, courses give an exposure to social sciences which are related to international business, and a year at a foreign university develops in students an experience-based international and intercultural point of view.

### Course Requirements

The Bachelor of International Business program consists of the following 20.0 credits:

10.5 credits of non-language core courses;  
4.0 credits of core language courses (in one language);  
5.5 credits of electives.

The language to be studied must be selected in consultation with the School of Business Supervisor responsible for the Bachelor of International Business.

### Graduation Requirements

In order to graduate, students must fulfil all University graduation requirements (see p. 49) and all Faculty regulations (see p. 82), in addition to all School regulations and requirements as set out below.

### Admission Requirements

The OSSD or the equivalent with an average of 75 percent or better, including at least six OACs. Of the six OAC's, one must be English and another must be Calculus, or Algebra/Geometry, or Finite Mathematics. A grade of 60 percent or better is required in the mathematics course offered. If Finite Mathematics is offered, the student must also have successfully completed Grade 12 Advanced Mathematics.

For applicants whose first language is not English, the requirement of OAC English can also be met under the conditions outlined in the section "English Language Requirements" (see p. 32).

Some knowledge of another language will be beneficial.

#### • Second or Subsequent Years

Applications for admission to Second or subsequent years will be assessed on their merits, subject to available spaces. Advanced standing will be granted only for those courses that are determined to be appropriate for the International Business program. Students who are admitted with advanced standing may have to delay the Third Year Abroad requirement until the First- and Second-year curricula are completed. Students must present an Honours International Business GPA of 6.5 or better, and a CI of 6.0 or better. On admission to the Bachelor of International Business program, students will not receive credit for courses with grades below C-.

### Academic Standing

To continue in the B.I.B. program, students proceeding into Second year must have and maintain a GPA of 6.0 or better in Business and Economics Core Courses of the program and a GPA of 6.0 or better in Language Core Courses.

To proceed into and continue in Third or Fourth year of the Bachelor of International Business program, students must have and maintain a GPA of 6.5 or better in Business and Economics Core Courses and a GPA of 6.5 or better in Language Core Courses.

In all years, students must also maintain a CI of 6.00 or better.

Credits in all Required (Core) Courses are used for GPA calculation except any taken abroad.

### Language Training Component

Students may select French, German, Italian, Japanese, Russian or Spanish as their desired language for study. Students should give both a first and second choice as their first choice may be oversubscribed. Students are strongly advised to continue their study and use of their selected language on their own in the summers between academic years. Failure to do so may seriously undermine their efforts during the year of study abroad. Students interested in languages other than those listed above should contact the Supervisor responsible for the Bachelor of International Business to verify if the preferred language option may have become available after the publication of this calendar.

All First year Bachelor of International Business students will be assessed for their ability in their selected language by the relevant language unit and placed in the appropriate courses as authorized by the language unit. Students with some ability in their selected language may be allowed to pursue studies in that language on the understanding that they will effect a significant improvement in their ability.

### Required (Core) Courses

#### First Year

2.0 credits of French, German, Italian, Japanese, or Spanish  
2.0 credits of Business 42.171★, 42.173, 42.270★  
1.0 credit of Economics 43.100 or 43.110

Or

1.0 credit of Russian  
3.0 credits of Business including 42.171★, 42.173, 42.224★, 42.240★, 42.270★  
1.0 credit of Economics 43.100 or 43.110

#### Second Year

2.0 credits of French, German, Italian, or Spanish,  
2.0 credits of Business 42.211★, 42.224★, 42.240★, 42.254★  
1.0 credit of Statistics Economics 43.220 or Mathematics 69.266★ and 69.267★

Or

2.0 credits of Russian  
1.0 credit of Business 42.211★, 42.254★  
1.0 credit of Business from 42.255★, 42.261★, 42.313★, 42.325★  
1.0 credit of Statistics Economics 43.220 or Mathematics 69.266★ and 69.267★

Or

1.0 credit of Japanese  
2.0 credits of Business 42.211★, 42.224★, 42.240★, 42.254★  
1.0 credit of Business from 42.255★, 42.261★, 42.313★, 42.325★  
1.0 credit of Statistics Economics 43.220 or Mathematics 69.266★ and 69.267★

#### Notes:

The language credits must be pre-specified by course numbers by the selected Language units. Students are advised not to register in courses before they are specified.

#### Third Year ( Abroad)

The Third year will be spent taking a set of courses at a foreign institution approved by the Carleton University School of Business. The number of courses available in English in foreign schools may vary. Students will take up to 5.0 credits as outlined below. Carle-



ton credits commensurate to courses taken abroad will be determined by the School and awarded towards the student's degree.

In order to be eligible to study abroad in Third year, students are required to have successfully completed a minimum of 4.0 specified Language Core Credits (except in the cases of Japanese and Russian; see the details) and 5.0 Business and Economics Core Credits from First and Second year and be in Good Standing.

(Russian and Japanese students: see the modification in the overview above.)

3.0 credits in Business or Economics at the 200-level or higher  
1.0 credit of any subject

1.0 credit in Political Science, History, Geography, Law, Sociology, Anthropology, or Women's Studies.

**Note:** At least 1.0 credit of the above must be delivered in the student's selected language.

Students are responsible for all traveling, living and incidental costs for fulfilling Third-year requirements abroad. Tuition fees and compulsory miscellaneous fees will be paid to Carleton University according to Carleton University's fee structure. The student may be liable for compulsory miscellaneous fees assessed by the foreign institution.

A limited number of bursaries which may offset the cost somewhat are usually available for which a student can apply. The details of these bursaries can be obtained from the Awards Office.

#### Fourth Year

Business 42.373★, 42.461★, 42.471★, 42.479★

1.5 credits from: Business 42.330★, 42.354★, 42.374★, 42.417★, 42.425★, 42.474★, 42.530, 42.531

1.0 credit of Business courses 200-level or above

0.5 credit of Non-Specified elective.

#### Minor in Business

Students registered in degree programs other than the Bachelor of Commerce or Bachelor of International Business, and who are in Good Standing in their programs of study, may register for the Minor in Business through the office of the Undergraduate Program Adviser in the School of Business. The Minor will be earned through completion of the 5.0 credits specified below, with a minimum GPA of 6.0. On successful completion of all requirements, the designation "Minor in Business" will be added to the student's transcript and diploma.

Students wishing to pursue this option are urged to register in the Minor Program at the School of Business office. Registration will enable the School to plan the services required and to provide students with proper guidance and counselling. To remain in the Minor program, students must maintain a GPA of 6.0 in the Minor courses. Standing will be regularly audited once a registered student has completed 1.0 credit in the Minor courses, and students who fail to maintain the required GPA will be deregistered from the Minor.

Students in some degree programs may not have sufficient "free" electives to complete the requirements for the Minor in Business within the normal number of courses designated for their degree. In such cases, students choosing to pursue the Minor option, with its additional certification, will have to fulfill the requirements of the Minor over and above the requirements of their primary degree program.

#### Required Courses (3.0 credits)

42.101★ Principles of Financial Accounting

42.102★ Management Accounting

42.211★ Introduction to Organizational Behaviour

42.224★ Basic Marketing

42.240★ Introduction to Information Systems

42.254★ Essentials of Finance

#### Elective Courses

2.0 credits must be completed from among any other Business courses. Of these 2.0 credits, at least 1.0 credit must be at or above 300-level. A list of optional courses deemed suitable for the program, and regulations governing their admissibility for credit, can be picked up from the School's Undergraduate Program Adviser's office.

#### Master of Management Studies

The School of Business offers a graduate program in the field of management leading to the Master of Management Studies (M.M.S.).

The focus of the program is applied research directed toward developing productivity and innovation in Canadian business. The program of studies will develop in students the conceptual and methodological skills required to undertake, manage and evaluate business research. It is designed to prepare students for managerial and policy roles in Canadian business. The applied research skills developed in the program are deemed to be essential if Canadian business is to be more productive and innovative in the increasingly competitive and complex world economy. The M.M.S. program requires successful completion of the equivalent of 5.0 credits. Students must complete 3.5 credits of which at least 2.5 must be at the 500-level or above and a thesis equivalent to 1.5 credits.

The areas of specialization within the program are:

Business Information Systems

Finance

International Business

Management

Marketing

Production and Operations

Research and Development Administration

#### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

B.Com. and B.I.B. students should use Business (42) prefix for registering in courses, that are cross-listed with other Carleton units.

In addition to the following list of courses, students may wish to consider graduate (500-level) courses. Their descriptions can be found in the *Graduate Calendar*. Registration in them requires Fourth-Year Standing, an overall GPA of 9.0 at the time of registration, and permission of the School of Business.

Business 42.101★

##### Principles of Financial Accounting

Discussion of the concepts of asset valuation and income measurement underlying the preparations and interpretation of financial statements.

Precludes additional credit for Business 42.100, 42.104★ and 42.270★.

Lectures three hours and tutorials one hour a week.

Business 42.102★

##### Management Accounting

An introduction to the problems of the use of accounting data for the purposes of planning and control of operations.

Precludes additional credit for Business 42.100, 42.105★ and 42.270★.

Prerequisite: Business 42.101★.

Lectures three hours and tutorials one hour a week.

Business 42.104★

##### Integrated Accounting I

An integrated approach to the basic concepts of both financial and managerial accounting. The users and uses of accounting information. Accounting issues involving income and cash-flows.



Precludes additional credit for Business 42.100, 42.101★ and 42.270★.

Prerequisite: Restricted to students registered in the B.Com. program.

Lectures three hours and tutorials one hour a week.

#### Business 42.105★

##### **Integrated Accounting II**

Accounting issues related to the management and use of economic resources and capital. Additional financial and managerial accounting topics are introduced along with related concepts in auditing, taxation and information technology.

Precludes additional credit for Business 42.100, 42.102★ and 42.270★.

Prerequisite: Business 42.104★ (with a grade of C- or better). Restricted to students registered in the B.Com. program.

Lectures three hours and tutorials one hour a week.

#### Business 42.142★

##### **Programming for Business Students I**

Basic control structures of sequence, selection, and iteration. Focus on problem solving in the context of programming for Business. Structured and visual languages may be taught.

Lectures three hours a week.

#### Business 42.171★

##### **Introduction to International Management**

Students will be introduced to the basic concepts of managerial tasks as they occur in international business. The impact of operating in several cultures and multiple national systems on such functions as organizational structuring, planning, operations and staffing will be considered. The international context of global business will be examined.

Precludes additional credit for Business 42.210★.

Prerequisite: Enrolment is restricted to students in the B.I.B. program.

Lectures three hours a week.

#### Business 42.173

##### **Quantitative Methods in Business**

Quantitative tools employed in business and economics. Aspects of differential and integral calculus, finite series, linear algebra, and matrix theory.

Precludes additional credit for Mathematics 69.007★.

Prerequisite: Enrolment is restricted to students in the B.I.B. program.

Lectures three hours and tutorials one hour a week.

#### Business 42.201★

##### **Intermediate Accounting I**

An examination of accounting and reporting issues related primarily to asset valuation and revenue recognition.

Precludes additional credit for Business 42.200.

Prerequisites: Business 42.101★ and 42.102★; or 42.104★ and 42.105★ (with a grade of C- or better in each).

Lectures three hours and tutorials one hour a week.

#### Business 42.202★

##### **Intermediate Accounting II**

An examination of accounting and reporting issues related primarily to liabilities and equities.

Precludes additional credit for Business 42.200.

Prerequisite: Business 42.201★ (with a grade of C- or better).

Lectures three hours and tutorials one hour a week.

#### Business 42.211★

##### **Introduction to Organizational Behaviour**

Models of individual and small group behaviour in organizations. Topics include motivation, communication, job design, leadership and group dynamics to provide systematic explanations of employee and managerial behaviour in organizations.

Precludes additional credit for Business 42.311★.

Lectures three hours a week.

#### Business 42.224★

##### **Basic Marketing**

Basic problems and practices in marketing, for students without a background in accounting and business. Marketing strategy, plan-

ning, packaging, branding and promotion at the level of the individual firm.

Prerequisite: Registration in B.I.D., B.I.B., Minor in Business or the Management Concentration in Engineering.

Lectures three hours a week.

#### Business 42.228★

##### **Introduction to Marketing**

Overview of the marketing function within the firm. Promotion, product design, pricing and distribution channels are examined. Consumer buyer behaviour, trends in retailing, wholesaling, sales force management and marketing research are also reviewed. Case studies are used.

Prerequisites: Business 42.101★ and 42.102★, or 42.104★ and 42.105★, Economics 43.100 and one of Psychology 49.100 or Sociology 53.100 (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.230★

##### **Introduction to Management Science**

Introduction to management science techniques that are routinely used as decision aids in government and industry. The course examines linear programming techniques, decision analysis and simulation. Students are introduced to quantitative models for decision making.

Precludes additional credit for Economics 43.404★ and Engineering 94.320★.

Prerequisites: Business 42.142★; Mathematics 69.109★ and 69.119★.

Lectures three hours a week.

#### Business 42.240★

##### **Introduction to Information Systems**

Management issues associated with information systems in organizations. Definition, description, fundamental technologies impacts and development of information systems, and associated ethical issues.

Prerequisite: Second-year standing.

Lectures three hours a week.

#### Business 42.242★

##### **Programming for Business Students II**

Structured programming in procedural languages. Advanced concepts of iteration, sequence and selection. Algorithms for searching, sorting, string processing and numerical analysis.

Precludes additional credit for Computer Science 95.102★ and 95.108★.

Prerequisite: Business 42.142★ (with a grade of C- or better).

Lectures three hours a week.

#### Business 42.254★

##### **Essentials of Business Finance**

Business firms' financing, capital investment, and dividend policy decisions, cost of capital and short-term asset management problems (Also listed as Economics 43.254★).

Precludes additional credit for Business 42.250★.

Prerequisites: Business 42.105★ or 42.102★ or 42.270★ (with a grade of C- or better).

#### Business 42.255★

##### **Business Finance**

Capital investment and financing decisions in the context of risk and return tradeoffs. Primary and derivative securities, and their role in risk management. Mergers, corporate restructuring, the theory of principal-agent relationships, and financial planning, forecasting, and control. (Also listed as Economics 43.255★).

Precludes additional credit for Business 42.250★.

Prerequisites: Business 42.254★, Economics 43.190, 43.110 or Engineering 91.380★, Business 42.173 or Mathematics 69.109★ and 69.119★.

Lectures three hours a week.

#### Business 42.261★

##### **Business Law I**

The legal system and legal ordering as they affect those engaged in business and economic activities. Particular emphasis on the law of tort and the law of contract.

Precludes additional credit for Law 51.231★.



**Prerequisite:** For students registered in the B.Com., B.I.B. or Minor in Business only.

**Note:** Students in Law programs cannot include Business 42.261★ towards the fulfillment of their degree requirements, even as an option, nor can they claim credit for it toward their Minor in Business certification.

Lectures three hours a week.

#### Business 42.262★

##### **Business Law II**

Legal topics of importance to those involved in business relationships. These topics include forms of business organization, property law and specialized contractual relationships such as sale of goods, negotiable instruments, personal property security, insurance, bailment and agency.

Precludes additional credit for Law 51.232★.

**Prerequisite:** Business 42.261★ or Law 51.231★ (with a grade of C- or better).

**Note:** Students in Law programs cannot include Business 42.262★ towards the fulfillment of their degree requirements, even as an option, neither can they claim credit for it toward their Minor in Business certification.

Lectures three hours a week.

#### Business 42.270★

##### **Accounting Fundamentals**

Financial and managerial accounting from the perspective of a user of accounting data. Tools necessary to understand and perform analysis of financial statements. Both North American and international accounting principles and practices. Product costing and the use of accounting data for management decision making and control.

Precludes additional credit for Business 42.101★, 42.102★, 42.104★ and 42.105★.

**Prerequisite:** Enrolment in the B.I.B. or in the Management Concentration in Engineering program.

Lectures three hours a week.

#### Business 42.301★

##### **Accounting for Business Combinations**

Consideration of accounting problems associated with business combinations. Particular attention is given to the preparation of consolidated financial statements. Discussion may also extend to financial reporting and diversified companies, reorganizations, etc. Selection of some topics may vary from year to year.

**Prerequisite:** Business 42.202★ (with a grade of C- or better).

Lectures three hours and tutorials one hour a week.

#### Business 42.305★

##### **Taxation 1: Introduction to Federal Income Tax**

An examination of federal income tax laws and regulations and their impact on an individual's financial and business decisions. Problems, issues and planning associated with the Income Tax Act and concerned with the computation of taxable income and taxes payable by an individual are discussed.

**Prerequisite:** Business 42.202★ (with a grade of C- or better).

Lectures three hours and tutorials one hour a week.

#### Business 42.308★

##### **Cost Accounting**

The use of accounting information for purposes of cost control and performance evaluation. Emphasis is on cost accumulation systems, performance evaluation, control models and analytical tools.

**Prerequisites:** One of Business 42.102★ or 42.105★ and Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).

Lectures three hours and tutorials one hour a week.

#### Business 42.312★

##### **Introduction to Human Resources Management**

Human Resource Management function in large formal organizations. Topics include human resources planning, recruitment, selection, performance evaluation, career development and training, compensation and benefits and the role of the professional personnel manager.

**Prerequisite:** Business 42.211★ or 42.311★ (with a grade of C- or better).

Lectures three hours a week.

#### Business 42.313★

##### **Introduction to Organization Theory**

Macro-organization theory. Structuring of organizations in a complex global economy. The effects of the external environment, technology, culture and organizational goals on the structure, processes and effectiveness of the organization are examined.

Precludes additional credit for Business 42.210★.

**Prerequisites:** Business 42.211★ and Sociology 53.100 or Psychology 49.100 (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.317★

##### **Introduction to Industrial Relations**

Industrial relations covering such topics as industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Economics 43.357★.)

**Prerequisite:** Business 42.211★ and Economics 43.100 or 43.110.

Lectures three hours a week.

#### Business 42.325★

##### **Marketing Communications**

Study of promotion as a communication process and a tool of marketing management. The course examines the planning of a promotional campaign, including budget development, consumer research in promotion, creative strategy, media strategy, non-product promotion, ethical issues and evaluating the effectiveness of promotional programs.

**Prerequisite:** Business 42.228★ or 42.224★ (with a grade of C- or better).

Lectures three hours a week.

#### Business 42.327★

##### **Marketing Research**

Topics include research design, questionnaire design, scales, sources of information and error, sampling techniques, basic statistical measures, measures of association, regression, and an overview of multivariate methods. The pragmatic implications of marketing research are stressed, with the use of case studies and actual data analysis.

**Prerequisites:** Business 42.224★ or 42.228★; Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.330★

##### **Introduction to Operations Management**

Activities, mostly managerial, entailed in selecting, designing, operating and controlling and updating production systems.

Precludes additional credit for Business 42.337★.

**Prerequisites:** Business 42.173 or 42.230★, one of Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.332★

##### **Management of Quality**

Topics include quality in manufacturing and service systems, quality management philosophies, total quality management, quality in product and process design, continuous improvement, reengineering, benchmarking, quality management assessment, and quality assurance, management of quality in the global enterprise.

**Prerequisite:** Business 42.330★ or 42.337★ (with a grade of C- or better in either).

Lectures three hours a week.

#### Business 42.333★

##### **Supply Chain Management**

Controlling the flows of material in supplier/manufacturing/distribution systems. Material and capacity requirements planning, manufacturing resource planning, master production scheduling, Just-in-Time, implementation issues, and supply chain management in global enterprises.



Prerequisite: Business 42.330★ or 42.337★ (with a grade of C- or better in either).  
Lectures three hours a week.

#### Business 42.334★ (ADM 3307)

##### **Business Forecasting**

Concepts, techniques and methods used in the private and public sectors to prepare short-term and long-term forecasts. Methods used include time series analysis, econometric models in forecasting, economic indicators, growth models, opinion polling and technology forecasting.

Prerequisites: Enrolment in B.Com. Technology and Operations Management concentration; and Business 42.330★ or 42.337★; and Mathematics 69.267★ or Economics 43.220 (with a grade of C- or better in each prerequisite).

#### Business 42.338★

##### **Simulation Methods in Business**

Computer-based simulation. Specific topics will include generating random observations, problem formulation, simulation model design, implementation using a computer language, and interpretation of simulation output.

Prerequisites: Business 42.142★ and 42.230★; Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).  
Lectures three hours a week.

#### Business 42.340★

##### **Database Analysis and Design**

Information management, database administration, software design and programming in the database environment. The construction of a database.

Precludes additional credit for Computer Science 95.305★.

Prerequisites: Business 42.142★ and 42.240★ (with a grade of C- or better in each).  
Lectures three hours a week.

#### Business 42.343★

##### **Information Systems Analysis**

Methods of analysis of computer-based information systems. Requirements analysis; the systems development life cycle; object oriented analysis; analysis of real time systems, and data analysis. Precludes additional credit for Business 42.342★ and Engineering 94.310★.

Prerequisite: Business 42.102★ or 42.104★; 42.242★ or Computer Science 95.204★ (with a grade of C- or better in each).  
Lectures three hours a week.

#### Business 42.344★

##### **Information Systems Design**

A continuation of Business 42.343★. Students will learn techniques to transform analysis into design. Topics will include user interface design, object oriented design, hardware, software and application design, integration and implementation.

Precludes additional credit for Business 42.342★.

Prerequisites: Business 42.340★ and 42.343★ (with a grade of C- or better in each).  
Lectures three hours a week.

#### Business 42.350★

##### **Corporate Finance**

An examination of the major issues in corporate finance and applied financial management. Topics include: introduction to portfolio theory, the capital asset pricing model, cost of capital, capital structure and dividend policy, lease financing, capital budgeting under uncertainty, mergers and consolidations. (Also listed as Economics 43.350★.)

Prerequisites: Business 42.250★ or 42.255★, Economics 43.202★ and one of Economics 43.220 or Mathematics 69.267★.  
Lectures three hours a week.

#### Business 42.352★

##### **Principles of Investments**

Procedures and methods of investment analysis. The stock and bond markets. Government regulation of securities markets. Valuation of common stocks and fixed income securities. Options, warrants, convertibles and commodities. (Also listed as Economics 43.351★.)

Prerequisites: Business 42.250★ or 42.255★ and Economics

43.220 or Mathematics 69.267★.

Lectures three hours a week.

#### Business 42.354★

##### **International Finance**

Management of corporate finance as it is affected by the requirements of international business. Issues related to international acquisitions, global investments, volatile exchange rates and hedging techniques. Role of international markets in financing corporate activity.

Prerequisite: Business 42.250★ or 42.255★ (with a grade of C- or better).

Lectures three hours a week.

#### Business 42.360★

##### **Small Business Management**

Socio-economic functions and activities of the owner-manager entrepreneur and examines the operations and nature of small businesses. Methods and models that are useful in the analysis of a small business enterprise.

Prerequisites: Business 42.224★ or 42.228★; 42.250★ or 42.254★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.361★

##### **Business and Its Environment**

Dynamic conditions that influence Canadian business, its organization, management and operations: consumerism and other social groups, technological developments, economic conditions, politico-governmental actions and legislation as well as contemporary issues such as ecology and pollution.

Prerequisites: Economics 43.100 or 43.110; Sociology 53.100 or Psychology 49.100 (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.373★

##### **International and Comparative Management**

Focus on managing large organizations spanning national boundaries, including both domestic firms with international markets and multinational corporations. Difficulties of maintaining lines of communication and control in international operations in disparate cultural settings.

Precludes additional credit for Business 42.463★.

Prerequisites: Second-year standing; Business 42.171★ or 42.211★ or 42.311★ (with a grade of C- or better)

Lectures three hours a week.

#### Business 42.374★

##### **The Environment of International Business**

Theories linking environmental factors and business strategy as a conceptual basis for a study of some of the major factors and institutions that shape international business strategy. International trade patterns, regionalization, shifts in international finance, research and development and transnational data flows.

Prerequisites: Second-year standing; Business 42.171★ or 42.210★ or 42.211★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.400★

##### **Accounting Theory**

Evolution of accounting theory with emphasis on concepts of income and current issues.

Prerequisites: Business 42.202★, 42.250★, or 42.254★; Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.401★

##### **Advanced Topics in Financial Accounting**

A review of the standard setting process, the conceptual framework and accounting measurement models. An evaluation of selected current topics of interest.

Prerequisite: Business 42.202★ (with a grade of C- or better).

Lectures three hours a week.



## Business 42.402★

**Advanced Accounting Problems**

Discussion, analysis, and integration of accounting, auditing, and income tax issues and problems encountered in professional practice. This course builds upon and integrates the knowledge and skills developed in preceding courses.

Precludes additional credit for Business 42.302★.

Prerequisite: Business 42.202★ (with a grade of C- or better).

Lectures three hours a week.

## Business 42.405★

**Taxation 2: Corporate Tax Management**

An intensive review of federal income tax laws and regulations as significant elements in the planning and decision making process of taxable Canadian corporations. Emphasis is placed upon the tax planning function of corporate management and the associated accounting and reporting aspects. This course builds upon Business 42.305★.

Prerequisite: Business 42.305★ (with a grade of C- or better).

Lectures three hours a week.

## Business 42.407★

**Auditing I**

A course in auditing theory, methodology and application.

Prerequisite: Business 42.202★ (with a grade of C- or better).

Lectures three hours a week.

## Business 42.408★

**Cost Management Systems**

Discussion of the role of accounting, performance evaluation and product costing. Attention is directed to the significant changes in the manufacturing environment and the reporting problems arising therefrom.

Precludes additional credit for Business 42.309★.

Prerequisite: Business 42.308★ (with a grade of C- or better).

Lectures three hours a week.

## Business 42.409★

**Auditing II**

Emphasis on the audit of advanced EDP systems, computer-assisted audit techniques and applications of sampling theory to auditing. Topics of current interest will be discussed.

Prerequisites: Business 42.240★ or Computer Science 95.108★ ;

Business 42.407★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.413★

**Organization Design and Restructuring**

Effective structuring of business organizations in competitive environment. Evaluation of design alternatives and analysis of success factors. Application of the theories in the context of the management process.

Prerequisites: Business 42.210★ or 42.313★; 42.211★ or 42.311★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.414★

**Strategic Human Resources Management**

A strategic approach to human resources management designed to enhance the organization's sustaining competitive advantages, innovativeness, core competencies and capabilities, and productivity within a complex and dynamic business environment. Current topics are discussed within the context of the organization's overall vision and corporate strategy.

Prerequisites: Business 42.312★; 42.210★ or 42.313★; and 42.211★ or 42.311★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.415★

**Organization Development and Change Management**

Process and structural theories and methods of organizational development. Issues of organizational renewal and personnel development. Various theories and methods of individual and organizational diagnosis and intervention.

Prerequisites: Third-year standing; Business 42.210★ or 42.313★; 42.211★ or 42.311★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.416★

**Practicum in Interpersonal and Team Skills**

Skills of supervising and working with other people including such topics as negotiating, dealing with conflict, setting goals, working with groups, and communication. Extensive use of experiential learning.

Prerequisites: Third-year standing; Business 42.210★ or 42.313★; 42.211★ or 42.311★ (with a grade of C- or better in each).

Lectures, seminars, and laboratory tutorials three hours a week.

## Business 42.417★

**Managing Workforce Diversity**

Issues confronting managers of a diverse workforce. Gender, ethnic diversity, disability, and sexual orientation. Practices which can help organizations to accommodate and benefit from workforce diversity.

Prerequisites: Business 42.312★ and 42.210★ or 42.313★, and 42.211★ or 42.311★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.418★

**Organizational Learning**

Contemporary training and development challenges facing individuals, organizations, and communities and the role of information technology in enhancing individual and collective skills development, capabilities, core competencies, intellectual capital and competitiveness.

Prerequisites: Business 42.312★; 42.210★ or 42.313★; and 42.211★ or 42.311★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.425★

**International Marketing**

The marketing function in international markets from a managerial perspective. Environments of foreign markets in relation to the marketing management functions of product, price, distribution and communication strategy and marketing research. International expansion methods, joint ventures and other business alliances, and international marketing.

Prerequisites: Third-year standing; Business 42.224★ or 42.228★ (with a grade of C- or better)

Lectures three hours a week.

## Business 42.426

**Consumer Behaviour**

The traditional socio-psychological theories of consumer behaviour. Current literature and the fundamental theories and concepts from various disciplines. Motivation, personality, perception, learning, communication of innovations, attitude theory, role theory, life style analysis, consumerism, etc.

Prerequisites: Third-year standing, and Business 42.228★ (with a grade of C- or better).

Lectures three hours a week.

## Business 42.428★

**Marketing Management**

This course emphasizes the "managerial" aspects of marketing. Such topics as: market segmentation, social and regulatory aspects in marketing, channels of distribution, industrial marketing, sales force management and other current topics are discussed in detail.

Prerequisite: One of Business 42.325★ or 42.327★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

## Business 42.435★

**Operations Research II**

Dynamic programming, inventory models, queuing, simulation, non-linear programming. (Also listed as Economics 43.405★.)

Prerequisites: Third-year standing; Business 42.230★ or Economics 43.404★, or Mathematics 69.381★; Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).

Lectures three hours a week.

## Business 42.436★

**Introduction to Statistical Decision Theory**

Examination of Bayesian approaches to decision-making under uncertainty for individuals and firms.



Precludes additional credit for Business 42.439 and Economics 43.407★.

Prerequisites: Economics 43.202★; and Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each).  
Lectures three hours a week.

#### Business 42.437★

##### **Applications of Statistical Decision Theory in Business**

Statistical Decision Theory-based approach to the Theory of Information Systems and other applications of Statistical Decision Theory to Business decision making.

Prerequisite: Business 42.436★ (with a grade of C- or better)  
Lectures three hours a week.

#### Business 42.438★

##### **Construction/Project Management**

Systems approach to project planning and control. Analysis of alternative network planning methods: CPM, precedence and PERT; planning procedure; computer techniques and estimating; physical, economic and financial feasibility; implementation feedback and control; case studies. (Also listed as Civil and Environmental Engineering 82.440★.)

Prerequisite: Fourth-year standing.

Lectures three hours a week, problem analysis three hours alternate weeks.

#### Business 42.440★

##### **Management of Information Systems**

Comprehensive treatment of current trends and management issues associated with information systems within organizations of local, national and international scope. Issues and techniques of information systems planning, administration, resource management and new technology adoption. Case studies are used.

Prerequisites: Fourth-year standing, Business 42.210★ and one of Business 42.240★ or Computer Science 95.204★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

#### Business 42.442★

##### **Information Systems Analysis and Design Practicum**

Students form teams for the purpose of designing and implementing a typical business information system. Projects are drawn from actual problems suggested by local business and institutions.

Prerequisites: Business 42.340★ or Computer Science 95.304★ (with a grade of C- or better), and Business 42.343★ (with a grade of B- or better).

Lectures three hours a week.

#### Business 42.444★ (ADM 4378)

##### **Telecommunications: A Business Perspective**

Introduction to circuit and packet transport, and metropolitan and intercity networks. Business applications of audio, data, fax, still image, and motion video telecommunications. Requirements from the end-user perspective. Impact on industries and firms.

Prerequisites: Third-year standing; enrolment in B.Com. Technology and Operations Management concentration; and Business 42.240★ (with a grade of C- or better).

Lectures three hours a week.

#### Business 42.446★

##### **Decision Making and Support Systems**

Framework, processes and technology components for building decision support systems. Planning and organizing for DSS, system design and integrating DSS into the organization. Group support systems, negotiation support systems, meeting and teleconferencing systems, knowledge based systems and artificial intelligence. High-level modelling languages are used.

Prerequisites: Business 42.230★ and one of Business 42.240★ or Computer Science 95.204★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.447★

##### **Technology Project Management**

Organizational, managerial and technical issues of information system and technology industry projects. Defining and setting up successful projects. Characteristics of successful project managers. Tracking and monitoring. Estimation techniques. Risk analy-

sis. Learning from projects. Examples and case studies.

Prerequisite: Business 42.330★ or 42.337★; 42.240★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.450★

##### **Advanced Corporate Finance**

An in-depth examination of some of the major theoretical issues in corporate finance. This course requires analyses and presentations of both articles from the finance literature and case studies. (Also listed as Economics 43.408★.)

Prerequisite: Business 42.350★ (with a grade of C- or better).

Lectures three hours a week.

#### Business 42.452★

##### **Investment Management**

Analysis of investment requirements for individuals and institutional investors: liquidity, risk and return; portfolio design, construction, management and control; performance measurement; capital market theory. (Also listed as Economics 43.411★.)

Prerequisite: Business 42.352★ (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.453★

##### **Finance and Capital Markets**

Analysis of Canada's financial markets with reference to institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, impact of these institutions on corporate financial policy and access to foreign capital markets. (Also listed as Economics 43.410★.)

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.220 or Mathematics 69.267★ (with a grade of C- or better).

Lectures three hours a week.

#### • **Topics in Management Studies** **(42.460★ – 42.467★)**

During the 1998-99 academic year, the School of Business expects to offer the following special topic courses:

#### Business 42.460★

##### **Topics in Management Studies**

Selected topics in accounting, finance, human resources, information systems, international business, marketing, operations management, etc. Note: Eligibility for this course to serve as a concentration option is to be established by the School.

Prerequisite: Permission of the School.

#### Business 42.461★

##### **Business Ethics**

Use of ethical reasoning to analyse business decisions. The ethical content of these decisions. The role of ethics in business situations. Practice in ethical reasoning. Major ethical systems.

Prerequisite: Fourth-year standing in B.Com. or B.I.B. program.

Seminars three hours a week.

#### Business 42.462★

##### **Women in Management**

Organizational and personal challenges arising from changing gender roles and the increased participation of women in management and professional organizational roles.

Prerequisites: Third-year standing; Business 42.211★ or 42.311★; 42.210★ or 42.313★ or Women's Studies 09.188 (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.464★

##### **The Business Environment in East/Central Europe and the Soviet Successor States**

An examination of the economic and legal environment in which new businesses are emerging in the region and the practical problems which face business ventures. Regulatory structures, patterns of foreign trade, market characteristics, scientific and technological base and business culture. (Also listed as East European Studies 55.406★.)

Prerequisites: Business 42.361★ or Economics 43.370★, or per-

mission of the School.  
Seminar three hours a week.

#### Business 42.465

##### **Directed Studies I**

This course is intended to provide qualified students with the opportunity of carrying out a major research project under the supervision of a faculty member. Students should enquire about procedures for Directed Studies in advance of the term in which they intend to register for the course.

Prerequisites: GPA of 10.0 or better and permission of the School.

#### Business 42.466★

##### **Directed Studies II (Term Paper)**

This course provides qualified students with the opportunity of carrying out a minor (one-term) research project under the supervision of a faculty member. Students should enquire about procedures for Directed Studies in advance of the term in which they intend to register for the course.

Prerequisites: GPA of 10.0 or better and permission of the School.

#### Business 42.467★

##### **Management of Technology and Innovation**

Integration of technology and strategy; the design of technological strategy; the development of new business around new technology; and the management of corporate research and development, including pre-competitive consortia.

Prerequisites: Third-year standing; Business 42.224★ or 42.228★; 42.311★ or 42.313 (with a grade of C- or better in each).

Lectures three hours a week.

#### Business 42.468★

##### **History of Business in Canada 1850-1980**

The place of business in Canadian society, economics and politics. The internal dynamics of Canadian business, and its external implications. Students apply a historical perspective to issues and problems in the contemporary business environment. (Also listed as History 24.325★.)

Prerequisite: Fourth-year standing in B.Com. or B.I.B.

#### Business 42.469★

##### **Strategic Management**

Analysis and evaluation of the organization's corporate and business strategies; integration and synthesis of knowledge acquired in the program by application of acquired functional skills to strategic decision making.

Precludes additional credit for Business 42.479★.

Prerequisite: Fourth-year standing in B.Com.

Lectures three hours a week.

#### Business 42.471★

##### **Cross-Cultural Communication**

Focus on effective cross-cultural communication. Readings, discussions, and activities build on experiential learning from the student's year of study abroad.

Prerequisite: Fourth-year standing in the B.I.B. program.

Workshop and discussion three hours a week.

#### Business 42.474★

##### **Workshop on International Management and Global Business**

A particular managerial field from an international perspective. Possible topics include personnel management in the global firm, international information systems, international logistics, and international research and development.

Prerequisite: Third-year standing in B.Com. or B.I.B. program.

Lectures three hours a week.

#### Business 42.479★

##### **Strategic Management for International Business**

Analysis and evaluation of the organization's global and national strategies. Emphasis on firms' market-entry strategies and on the unique problems of managing in distant and different cultures.

Precludes additional credit for Business 42.469★.

Prerequisites: Fourth-year standing in B.I.B. or B.Com., International Business concentration

Lectures three hours a week.

#### Business 42.480★

##### **Business Case Analysis**

Analysis, solution, and presentation of business cases in a competitive environment focusing on a specific functional area, choosing from a number of functional areas. Participation in the Annual (Canadian) Inter-Collegiate Business Competition.

Prerequisites: Enrolment in B.Com. or B.I.B. program; and permission of the School.

Flexibly scheduled meetings and workshops with faculty.

#### Business 42.481★

##### **Selected Topics: Workshop in Urban Studies**

Study of one specific aspect of architecture in the area of urban studies. Workshop offerings change from year to year. (Also listed as Architecture 78.392★.)

Prerequisite: Fourth-year B.Com. or B.I.B..

Workshop six hours a week.

#### Business 42.490★

##### **Auditing III**

This course reviews the fundamental role of auditing and develops an understanding of issues and challenges facing the profession such as comprehensive auditing and auditing small businesses and non-profit organizations. Integration of topics from this course and its prerequisites is accomplished primarily through applications problems.

Prerequisite: Business 42.407★ (with a grade of C- or better).



# Canadian Studies

## (Arts and Social Sciences)

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1206 Dunton Tower  
Telephone: 520-2366

### Academic Administration

**Director, P. Armstrong**  
**Supervisor of Graduate Studies, J. Smith**

**Supervisor of Undergraduate Studies, S. McMullin**

### Teaching Staff

#### Professor

**Pat Armstrong, B.A. (Toronto), M.A., Ph.D. (Carleton)**

#### Associate Professors

**Katherine Arnup, B.A. (Toronto), B.Ed., M.Ed., (O.I.S.E.), Ph.D. (Toronto) • Stan McMullin, B.A., M.A. (Carleton), Ph.D. (Dalhousie)**

#### Assistant Professor

**Madeleine Dion Stout, B.N. (Lethbridge), M.A. (Carleton) • Pauline Rankin, B.A. (Toronto) M.A., Ph.D. (Carleton) • Julian Smith, B.A. (Oberlin College), M.Arch. (Massachusetts Institute of Technology)**

#### Adjunct Professors

**John B. Carroll • David Hawkes**

#### Adjunct Research Professors

**Rt. Honourable Joe Clark • Heather Menzies • James Page**

#### Fellows

**Richard T. Clippingdale • H. Blair Neatby**

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### General Information

The undergraduate program in Canadian Studies aims to provide students with a broad, interdisciplinary view of Canada while at the same time allowing them to combine their study with disciplinary training in other Arts and Social Science departments if they so desire. Canadian Studies offers Combined B.A. (Honours), B.A. and Combined B.A. programs.

The program forms the undergraduate division of the School of Canadian Studies and, like the graduate division of the School, benefits from Carleton University's situation in Canada's capital and the richness of material available in Ottawa for such studies.

The program core is designed to give the student a broad understanding of Canadian history, culture and society, and the opportunity to study the relationships among various aspects of Canada in some depth.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to all Committee regulations and requirements as set out below.

### Combined B.A. (Honours) Program

#### Core Credits

The Combined B.A. (Honours) program in Canadian Studies requires a core of the following 5.0 credits:

1. Canadian Studies 12.100;
2. French 20.106 or Linguistics and Applied Language Studies 23.190;
3. Canadian Studies 12.200 or 12.288;
4. Canadian Studies 12.302;
5. Canadian Studies 12.402.

With the permission of the Undergraduate Supervisor, students with advanced proficiency in the French language may substitute, for the language requirement, another 1.0 credit in Quebec culture or society that is taught in French.

#### Program Electives

In addition to the 5.0 core credits, the Canadian Studies Combined B.A. (Honours) program requires the following 3.0 credits:

1. 1.0 credit from the following list:  
Art History 11.202★ or 11.300★ or 11.301★;  
English 18.282 or 18.381★ or 18.383★;  
Economics 43.325;

French 20.270 or 20.372★;  
 Geography 45.320★ or 45.255★ or 45.335;  
 History 24.233 or 24.234 or 24.235;  
 Political Science 47.200 or 47.201;  
 Sociology-Anthropology 56.220.

2. 1.0 Arts credit *and* 1.0 Social Science credit from the list of courses with substantial Canadian content on p. 177, one of which must be at the 400-level.

The same course may not be used to satisfy more than one of the alternative French requirements for core courses and the requirements for program electives.

## B.A. Program

### Core Credits

The B.A. program in Canadian Studies requires a core of the following 4.0 credits:

1. Canadian Studies 12.100;
2. French 20.106 or Linguistics and Applied Language Studies 23.190;
3. Canadian Studies 12.200 or 12.288;
4. Canadian Studies 12.302.

With permission of the Undergraduate Supervisor, students with advanced proficiency in the French language may substitute, for the language requirement, another 1.0 credit in Quebec culture or society that is taught in French. Carleton University courses that may normally be used for this purpose are: French 20.270, 20.372★.

A GPA of 4.0 or better must be achieved in the required credits of the program core.

### Program Electives

In addition to the 4.0 core credits, the Canadian Studies B.A. program student must take the following 6.0 credits:

1. 1.0 Arts credit *and* 1.0 Social Science credit from the following list:

#### Arts

Art History 11.202★ *and* 11.300★ or 11.301★;  
 English 18.282 or 18.381★ or 18.383★;  
 French 20.270 *and* 20.372★;  
 History 24.233 or 24.234 or 24.235.

#### Social Sciences

Economics 43.325;  
 Geography 45.320★ *and* 45.255★ or 45.335;  
 Political Science 47.200 or 47.201;  
 Sociology-Anthropology 56.220.

2. 1.0 Arts *and* 1.0 Social Science credit from the list of courses with substantial Canadian content. (See p. 177.)

3. 2.0 additional credits with substantial Canadian content.

At least two of the program electives must be above the 200-level.

The same course may not be used to satisfy more than one of the alternative French requirements for core courses and the requirements for program electives.

## Combined B.A. Program

### Core Credits

The Combined B.A. program in Canadian Studies requires a core of the following 4.0 credits:

1. Canadian Studies 12.100;
2. French 20.106 or Linguistics and Applied Language Studies 23.190;
3. Canadian Studies 12.200 or 12.288;

### 4. Canadian Studies 12.302.

With the permission of the Undergraduate Supervisor, students with advanced proficiency in the French language may substitute, for the language requirement, another 1.0 credit in Quebec culture or society which is taught in French. Carleton University courses that may normally be used for this purpose are: French 20.270, 20.372★.

A GPA of 4.0 or better must be achieved in the required credits of the program core.

### Program Electives

In addition to the 4.0 core credits, the Canadian Studies Combined B.A. (3 year) program student must take the following 2.0 credits:

1. 1.0 credit from the following list:

Art History 11.202★ or 11.300★ or 11.301★;  
 English 18.282 or 18.381★ or 18.383★;  
 Economics 43.325;  
 French 20.270 or 20.372★;  
 Geography 45.320★ or 45.255★ or 45.335;  
 History 24.233 or 24.234 or 24.235;  
 Political Science 47.200 or 47.201;  
 Sociology-Anthropology 56.220.

2. 1.0 credit from the list of courses with substantial Canadian content. (See p. 177.)

At least one of the program electives must be above the 200-level.

Students who wish to use one of the courses required by Canadian Studies to fulfil a requirement of their second major discipline may negotiate a substitute course with the Canadian Studies Undergraduate Supervisor. At least one of the program electives in the Combined B.A. degree program must be in the Faculty other than the one from which the student's second major is chosen.

The same course may not be used to satisfy more than one of the alternative French requirements for core courses and the requirements for program electives.

### Minor in Canadian Studies

Students registered in B.A. (Honours), B.A. or Combined B.A. programs may obtain a Minor in Canadian Studies by completing the 4.0 credits specified below, with a minimum G.P.A. of 6.5.

1. 3.0 credits chosen from 12.100, 12.200, 12.288, 12.301★, 12.302★, 12.381★, 12.382★, 12.383★.
2. 1.0 credit chosen from the list of Courses with Substantial Canadian Content Offered within the Faculties of Arts and Social Sciences and Public Affairs and Management on p. 177. These credits may not be chosen from the student's Major(s).

### Mention: français

Students who wish to qualify for the "Mention: français" notation (see p. 52) in Canadian Studies may do so by fulfilling the requirements listed below, in consultation with the Undergraduate Supervisor. Courses taken for the "Mention: français" notation may be used to fulfil B.A. (Honours) and B.A. degree requirements.

Courses taught in French at the University of Ottawa, or at another university, which are approved by the Undergraduate Supervisor, may be used to satisfy the "Mention: français" requirements. Students who wish to enrol in University of Ottawa courses for this purpose must do so through the University of Ottawa Exchange Agreement (p. 75). To enrol in courses in French at another university a letter of permission is required. (See articles 3.12 and 3.13, on p. 75.)

### Combined Honours Program

To graduate with the notation "Mention: français" students must include the following courses in their degree program:

1. 1.0 credit in the advanced study of the French language.



2. 1.0 credit in French-Canadian culture and heritage such as French 20.270, or 20.372★ or a course in another appropriate discipline, given in French, which is approved by the Undergraduate Supervisor. Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.

3. 1.0 credit on a Canadian subject at the 200- or 300-level, taught in French, in any appropriate discipline. For Carleton University courses that may be used to fulfil this requirement, consult the list of courses with substantial Canadian content (p. 177). Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.

4. 1.0 credit on a Canadian subject at the 400-level, taught in French, including either Canadian Studies 12.493★ and 12.494★, or a directed studies, tutorial, research paper, or course in any appropriate discipline. All written work must be submitted in French. Note that directed studies, tutorials, and research papers are weighted differently in various departments. Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.

5. Combined Honours program students must meet the "Mention: français" requirements of both disciplines.

### B.A. or Combined B.A. Programs

To graduate with the notation "Mention: français" students must include the following courses in their degree program:

1. 1.0 credit in the advanced study of the French language.

2. 1.0 credit in French-Canadian culture and heritage such as French 20.270, or 20.372★, or a course in another appropriate discipline, given in French, which is approved by the Undergraduate Supervisor. Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.

3. 1.0 credit on a Canadian subject at the 200- or 300-level that is taught in French in any appropriate discipline. For Carleton University courses that may be used to fulfil this requirement, consult the list of courses with substantial Canadian content (p. 177). Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.

4. Combined B.A. program students must meet the "Mention: français" requirements of both disciplines.

### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Canadian Studies 12.100

#### Introduction to Canadian Studies

Introduction to interdisciplinary Canadian Studies. Issues from Canada's past and present. Topics may include: original peoples, language and ethnicity, communications and technology, immigration, arts and culture, economics, environmentalism, regionalism, religion, gender, Quebec and English Canada and international relations.

Two hour lecture and one hour discussion group a week.

Canadian Studies 12.200

#### Culture, Identity and Community in Canada

Using an interdisciplinary approach, this course explores the composition and diversity of cultures in Canada. Aspects of social and material cultures, folklore, citizenship and the politics of multiple identities are addressed.

Prerequisite: Canadian Studies 12.100.

Two hour lecture and one hour discussion group a week.

Canadian Studies 12.288

#### Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty members from the Departments of French, and English Language and Literature, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. (Also listed as English 18.288.)

Prerequisites: A basic reading knowledge of French, and Second-year standing.

Three hours a week.

Canadian Studies 12.302

#### Canadian Studies Seminar

This course is designed to allow the student to bring together the knowledge acquired in the various disciplines of the program. Each year a different topic or topics are explored in an interdisciplinary perspective. The topic for 1998-99 will be announced.

Prerequisite: Third-year standing in Canadian Studies or permission of the School.

Seminar three hours a week.

Canadian Studies 12.350★

#### Canada in the Global Village

Canada's development as a series of technological projects — from fur-trading routes to canals, railways and telegraphs, radio and television and now, the information highway. Critiques the dominant discourse on Canadian technology — alternately technology as progress and technological dependency. Precludes additional credit for Canadian Studies 12.402 (if taken before Fall 1997.)

Prerequisite: Canadian Studies 12.100.

One hour per week of video-based documentary on ITV and one hour a week of instructor-led electronic discussion.

Canadian Studies 12.380

#### Internship Practicum

A limited number of internships and practicum placements are available in institutional settings, primarily in the Ottawa area. Students are required to submit a formal written report concerning their placement. The written work is evaluated jointly by the student's internal and placement supervisors. A maximum of 1.0 credit of internship/practicum may be offered in fulfilment of Canadian Studies requirements.

Prerequisite: Permission of the School.

Canadian Studies 12.381★

#### Internship/Practicum

For course description, see Canadian Studies 12.380.

Prerequisite: Permission of the School.

Canadian Studies 12.382★

#### Internship/Practicum

For course description, see Canadian Studies 12.380.

Prerequisite: Permission of the School.

Canadian Studies 12.383★

#### Internship/Practicum

For course description, see Canadian Studies 12.380.

Prerequisite: Permission of the School.

Canadian Studies 12.402

#### Canadian Studies Seminar

This course is designed to allow the Honours student to engage in research and class discussion on topics of an interdisciplinary nature. The topic for 1998-99 will be announced.

Seminar three hours a week.

Canadian Studies 12.491★

#### Selected Problems in Canadian Studies

The choice of topics varies from year to year.

Prerequisite: Permission of the School.

Canadian Studies 12.492★

#### Selected Problems in Canadian Studies

The choice of topics varies from year to year.

Canadian Studies 12.493★

#### Études dirigées I

Cours facultatif offert seulement aux étudiants de quatrième année Honours en Études canadiennes ("Mention: français"). Ce cours comprend des lectures dirigées et des travaux écrits dans un domaine relié aux Études canadiennes.

Prerequisite: Permission of the School.

**Canadian Studies 12.494★****Études dirigées II**

Cours facultatif offert seulement aux étudiants de quatrième année Honours en Études canadiennes ("Mention: français"). Ce cours comprend des lectures dirigées et des travaux écrits dans un domaine relié aux Études canadiennes.

Prerequisite: Permission of the School.

**Canadian Studies 12.495★****Directed Studies I**

An optional course normally restricted to Fourth-year Honours students in Canadian Studies and to Qualifying-year Graduate students. Includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the School.

**Canadian Studies 12.496★****Directed Studies II**

An optional Course normally restricted to Fourth-year Honours students in Canadian Studies and to Qualifying-year Graduate students. Includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the School.

**Canadian Studies 12.497★****Directed Studies III**

An optional course normally restricted to Fourth-year B.A. (Honours) students in Canadian Studies and to Qualifying-year Graduate students. Includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the School.

## **Courses with Substantial Canadian Content Offered within Arts and Social Sciences and Public Affairs and Management**

**Art History**

11.202★, 11.205★, 11.206★, 11.300★, 11.301★, 11.302★, 11.314★, 11.362★, 11.400★, 11.404★, 11.405★, 11.480★

**Economics**

43.235, 43.320★, 43.325, 43.330★, 43.335, 43.341★, 43.344★, 43.347★, 43.348★, 43.357★, 43.367★, 43.380★, 43.436★, 43.410★, 43.441★, 43.442★, 43.465, 43.471★

**English Language and Literature**

18.288, 18.282, 18.381★, 18.383, 18.482★, 18.483, 18.486★, 18.488★

**Film Studies**

19.229, 19.329, 19.429

**French**

20.270, 20.372★, 20.383★, 20.472

**Geography**

45.230★, 45.255★, 45.319★, 45.320★, 45.335, 45.336★, 45.351★, 45.370★, 45.404★, 45.423★, 45.425★, 45.426★, 45.427★, 45.431★, 45.435★, 45.443★, 45.447★

**History**

24.130, 24.233, 24.234, 24.235, 24.322★, 24.324, 24.325★, 24.328★, 24.329★, 24.330★, 24.331★, 24.332★, 24.333★, 24.334★, 24.335, 24.336★, 24.337★, 24.339★, 24.350★, 24.351★, 24.353, 24.354, 24.356★, 24.357★, 24.362★, 24.421, 24.422, 24.424, 24.426, 24.430, 24.431, 24.433, 24.434, 24.437, 24.438, 24.439

**Italian**

26.262

**Journalism**

28.251★, 28.306★, 28.352★

**Law**

51.100, 51.203, 51.204, 51.205, 51.301★, 51.302★, 51.303★, 51.336★, 51.337★, 51.341★, 51.345★, 51.348★, 51.350★, 51.351★, 51.352★, 51.353★, 51.354★, 51.356, 51.359★, 51.380★, 51.384, 51.406★, 51.412★, 51.435★, 51.438★, 51.442★, 51.445★, 51.456★, 51.457★, 51.467★

**Linguistics and Applied Language Studies**

23.190, 29.271★, 29.274★

**Mass Communication**

27.306★, 27.430★, 27.432★

**Music**

30.313★, 30.314★, 30.332★, 30.414★, 30.433★

**Political Science**

47.102, 47.112★, 47.200, 47.201, 47.300★, 47.301★, 47.302★, 47.303★, 47.304★, 47.305★, 47.306★, 47.307★, 47.319★, 47.335★, 47.336★, 47.341★, 47.342★, 47.346★, 47.366★, 47.367★, 47.400, 47.402★, 47.403★, 47.405, 47.406★, 47.407★, 47.408★, 47.409★, 47.410★, 47.411★, 47.416★, 47.417★, 47.418★, 47.419★, 47.424★, 47.426★, 47.441★

**Sociology and Anthropology**

56.220, 56.241, 53.247, 53.252★, 53.256★, 54.318★, 54.319★, 56.320, 56.327★, 53.373★, 53.377★, 56.465★, 54.470★

**Women's Studies**

09.188, 09.280★, 09.491★, 09.492★



# Central/East European and Russian-Area Studies

## (Public Affairs and Management)

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### Academic Administration

**Director,** Joan DeBardeleben

**Honours Adviser,** Joan DeBardeleben

### Teaching Staff

#### Professor

**Joan DeBardeleben, B.A., M.A., Ph.D. (Wisconsin)**

#### Associated Members

**J. Laurence Black, B.A. (Mount Allison), M.A. (Boston), Ph.D. (McGill) • Richard Lee Carson, M.A. (Minnesota), Ph.D. (Carleton) • Andrea S. Chandler, B.A. (Dalhousie), M.A. (Carleton), M.Phil., Ph.D. (Columbia) • Joan DeBardeleben, B.A., M.A., Ph.D. (Wisconsin) • Piotr Dutkiewicz, LL.M. (Warsaw), Ph.D. (Soviet Academy of Science) • R. Carter Elwood, B.A. (Dartmouth), M.A., Ph.D. (Columbia) • Carl G. Jacobsen, B.A. (Carleton), M.Phil., Ph.D. (Glasgow) • Diane O. le Berrurier, Cands. H.A.A., Cands. Ph.H.S., Lics. H.A.A., Agreg. H.A.A. (Université libre de Bruxelles), M.A., Ph.D. (Chicago) • A. Lewinson, M.Sc. (Odessa), M.A. (Ottawa) • David P. Long, B.A. (Keele), Ph.D. (London School of Economics) • M. McMahon, B.Soc.Sc. (Dublin), M.A., Ph.D. (Toronto) • G.I. Ozornoy, M.A. (Leningrad State University, Alberta), Ph.D. (Leningrad Institute of Finance and Economics, Toronto) • Jeremy T. Paltiel, B.A. (Toronto), M.A., Ph.D. (California at Berkeley) • Adam Podgorecki, Law Ph.D. (Jagiellonski), Docent in Sociology (Warsaw) • M. Sabanadze M.A. (North Ossetia), Ph.D. (Leningrad State) • Lloyd H. Strickland, B.A. (John Hopkins), Ph.D. (North Carolina)**

#### Distinguished Research Professor

**Carl H. McMillan, Jr., M.A. (Yale), Ph.D. (John Hopkins)**

#### Adjunct Research Professors

**M. Carley • H. Diskin • A. Donskov • J. Fedorowicz • J. Fraser • A. Kagedan • P. Konechy • M. Los • M. Opalski • P. Roberts • R. Sokoloski**

### General Information

A Committee on Soviet and East European Studies was formed in 1963 to foster interdisciplinary studies, research, conferences and publications in this area. The Committee was transformed into the Institute of Soviet and East European Studies in 1970. Following the collapse of the Soviet Union at the end of 1991, the Institute was renamed the Institute of Central/East European and Russian-Area Studies to reflect the new political reality in the region. Faculty members from eleven disciplines (Art History, Economics, Geography, History, International Affairs, Law, Political Science, Psychology, Russian, Business and Sociology) participate in the Institute's programs. They are joined on an occasional basis by visiting scholars (including visitors from the Soviet successor states and East/Central Europe).

In recent years the East and Central European countries and former Soviet republics have been in the midst of a transition from one type of socio-economic and political system to another, although they are still linked with each other by earlier historical experience, the common legacy of Soviet-style communism, and by a set of similar problems resulting from that legacy. Since the collapse of the Soviet Union, the field of study remains unified by a concern with understanding the nature of the transitional processes affecting the region, in their multiple social, cultural, economic and political dimensions. Institute courses and research programs focus on several broad themes. These themes are treated in historical context, with attention to historical roots of

and parallels with contemporary developments. Major themes include: the legacy of the Soviet system in the region and its impact on contemporary developments; transition periods in the history of the region, with particular emphasis on political, economic, and social dimensions of the post-communist transition; nationalism and ethnicity as forces for change in the area; international integration among countries of the region, and the reintegration of the region into the larger international community; environmental problems and policies in a comparative perspective; the changing relationship between state and society, with attention to ethnic, class, and gender issues.

On the undergraduate level, the Institute offers an interdisciplinary Bachelor of Arts (Honours) program in Central/East European and Russian-Area Studies. The Institute also administers a program of interdisciplinary studies leading to a Master of Arts degree in Central/East European and Russian-Area Studies, the first one of its kind in Canada. The curricula for both programs are offered largely through participating departments. Students in the Institute's programs are eligible to apply, under the academic exchange agreement between Carleton University and the University of St. Petersburg, and Moscow State University, for ten months of study in Russia. A similar exchange agreement exists with the University of Warsaw; and an agreement with the International Cultural Institute in Budapest provides for graduate studies at post-secondary institutions in Hungary. Students participating in the Institute's programs have at their disposal a specialized periodicals reading room, the University library's collection of books,

documents, periodicals and micro-materials on the former Soviet republics and on Central and Eastern Europe and the extensive holdings of the National Library and other specialized libraries in Ottawa. As of the Fall term 1987, the Institute has had a system in place for viewing live Russian television.

Each year the Institute organizes a series of public seminars and lectures by invited specialists from outside the University, on a broad range of topics bearing on the Soviet successor states and/or Central and Eastern Europe. The Institute also sponsors frequent conferences and colloquia and promotes extension courses in the area. The Institute maintains research programs in several broad areas: East-West relations (with emphasis on their economic aspects), nationality and minority issues, environmental policy, social consequences of economic change, and aspects of Canadian-Soviet relations. The Institute issues working papers and special studies, and has sponsored ten volumes in the Carleton Library Series in Soviet and East European Studies.

In the face of current transformations, the region retains enormous importance in shaping larger global processes and the international balance of power; expanded economic opportunities in the area also are increasing the demand for area specialists in the business and financial communities. A new emphasis on regional studies and international relations at the secondary level makes this program attractive to school boards. Therefore, a degree in Central/East European and Russian-Area Studies provides a valuable preparation for a career in government service, in business and finance, or in non-governmental organizations. Some students find interdisciplinary and language studies an important first step to more specialized training in law, business or in one of the related academic disciplines.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to all regulations and requirements of the Institute, as set out below.

## Honours Program

The objective of the Honours program is to equip students with indispensable linguistic tools and to provide, through an interdisciplinary approach, an integrated knowledge of the cultures, historical developments and contemporary social, economic and political systems of the area. The program leads to the degree of Bachelor of Arts with Honours in Central/East European and Russian-Area Studies.

## Combined Honours Program

A Combined Honours degree between Central/East European and Russian-Area Studies and the School of Journalism and Communication is available to students already accepted into the Journalism Honours Program.

Course requirements for this degree are planned by the Director of the Institute in consultation with the Director of the School of Journalism and Communication, and are designed to accommodate the students' interests and needs.

Combined Honours programs are also possible in conjunction with other disciplines and are governed by the regulations of the departments concerned.

Further details on these programs may be obtained from the Institute.

## Admission Requirements

Admission to the program must be approved by the Institute of Central/East European and Russian-Area Studies and by the Faculty of Public Affairs and Management Committee on Honours. Students with a 65 percent average or better in the OSSD or a C standing in the Carleton Qualifying-University year may be en-

rolled in the program in the First year. With the consent of the Institute, students may also enter the program in subsequent years provided they have maintained Honours standing and have completed the program's course requirements to that point.

## Course Requirements

A total of 20.0 credits is required for the Honours B.A. in Central/East European and Russian-Area Studies.

All candidates normally are required to take 3.0 credits in the Russian language beyond the introductory level: Russian 36.202 (Intermediate), 36.203 (Grammar), and 36.302 (Advanced). If students wish to take further Russian language courses, Russian 36.307★ (Syntax) and 36.308★ (Translation) or 36.420★ and 36.421★ (Russian for International Relations) are advised. Russian 36.120 may be substituted for 36.100 and 36.202. Students normally are expected to complete their language requirements by the end of their Third year. A maximum of 3.0 additional credits in Russian language or literature beyond the required Russian language courses may be counted towards the 8.5 credits in the Major field needed for the degree. Students planning to apply to the graduate program in the Institute are strongly urged to take Russian 36.307★ and 36.308★ in preparation for satisfying the Russian language requirement for the M.A.

Each year courses must be chosen in consultation with the Honours Adviser. In the First year these courses should be from the 100-level or from higher-level courses open to First-year students. These courses should be selected as preparation for more specialized Central/East European and Russian-Area Studies offered in various disciplines. Introductory courses in economics, European history and political science (as well as other introductory courses in the social sciences) therefore normally are taken at this stage.

In the following three years, candidates must select 8.5 additional credits, (including at least 5.0 from departments other than Russian, and representing no fewer than three different disciplines) from the area-related courses offered by participating departments and listed below. The following courses are regarded as forming the core of the Institute's undergraduate area studies program: Economics 43.370★, History 24.260 or 24.360, Political Science 47.328★, 47.329★ and 47.314 and all are normally required of all candidates for the degree. One of these 8.5 credits must be either East European Studies 55.498 or an approved Fourth-year seminar given by the Institute or by one of the participating departments.

3.5 additional credits are to be selected with the approval of either the Honours Adviser or the Director.

## Courses Offered by Participating Departments

### *Art History*

11.422★

### *Economics*

43.370★, 43.486★, 43.487★, 43.586★, 43.587★

### *Geography*

45.360★, 45.361★, 45.460★

### *History*

24.260, 24.359★, 24.360, 24.365★, 24.366★, 24.385★, 24.456, 24.460, 24.461, 24.560, 24.589

### *International Affairs*

46.538★, 46.582★, 46.584★

### *Philosophy*

32.221★, 32.222★

### *Political Science*

47.314, 47.320, 47.431★, 47.432★, 47.461★, 47.514★, 47.515★, 47.516★, 47.586★



*Russian*

36.120, 36.201★, 36.202, 36.203, 36.205★, 36.220, 36.260, 36.301★, 36.302, 36.305★, 36.307★, 36.308★, 36.360★, 36.361★, 36.407, 36.409, 36.420★, 36.421★, 36.493★, 36.494★

**Note:** Not all of the foregoing courses are offered in any given year, and not all combinations of courses are possible. See departmental listings for further details.

**Academic Standing**

Students must maintain Honours standing as prescribed by the general requirements of the Faculty of Public Affairs and Management.

**Graduate Program**

The Institute offers an interdisciplinary Master of Arts program in Central/East European and Russian-Area Studies with the participation of faculty from the Departments of Art History, Economics, Geography, History, International Affairs, Law, Political Science, Russian, Sociology and the School of Business as well as invited specialists from other universities and visiting scholars from the former Soviet Union and East/Central Europe. It is designed for students wishing to acquire specialized knowledge of the area, and proficiency in Russian, before proceeding towards a doctoral degree in one of the disciplines represented in the program, either at Carleton or another university. The program is also suitable for students aspiring to a professional, business or government career which requires knowledge of the area. For details, consult the *Graduate Studies and Research Calendar*.

**Courses**

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in Central/East European and Russian-Area Studies 01.102

**Social Impact of Transformation in the Post Communist Era**  
See course description on p. 84.

East European Studies 55.113★

**Social Impact of Transformation in the Post-Communist Era**  
Political, economic and social changes that have accompanied the collapse of the Berlin Wall. The role of the society in these political upheavals and the impact of the end of the Cold War on reform in Western and developing countries. (Also listed as Political Science 47.113★)

Precludes additional credit for First-Year Seminar 01.102 and First-Year Seminar in Political Science 01.133.

Lecture and discussion three hours a week.

East European Studies 55.405★

**Environmental Problems and Politics in East/Central Europe and Eurasia**

Nature, origins and policy responses viewed from economic, political, and geographic perspectives. Also offered at the graduate level, with additional or different requirements, as East European Studies 55.505, for which additional credit is precluded.

Prerequisite: A previous course on the region or on environmental issues; or permission of the Institute.

Seminar three hours a week.

East European Studies 55.406★

**The Business Environment in East/Central Europe and the Soviet Successor States**

Economic and legal environment in which new businesses are emerging in the region and the practical problems which face them. Regulatory structures, patterns or foreign trade, market characteristics, scientific and technological base and business culture. (Also listed as Business 42.464★.)

Prerequisite: Economics 43.370★ or Business 42.361★; or permission of the Institute.

Seminar three hours a week.

East European Studies 55.407★

**Social and Political Discourse in Russia**

Contemporary social and political issues covered in Russian-language media. Most course readings and instruction in Russian, but student participation may be in English and Russian.

Also offered at the graduate level, with additional or different requirements, as East European Studies 55.507, for which additional credit is precluded.

Prerequisites: Appropriate facility in the Russian language and permission of the Institute.

Seminar three hours a week.

East European Studies 55.408★

**Nationalism and Ethnic Conflict in Eastern and Central Europe**

Ethnic basis of nationalism in the region. Ethnic politics and trends. Also offered at the graduate level with additional or different requirements, as East European Studies 55.508, for which additional credit is precluded.

Precludes additional credit for East European Studies 55.401★ or 55.404★ (if taken before 1995-96).

Prerequisite: Permission of the Institute.

Seminar three hours a week.

East European Studies 55.409★

**Development of the Russian North**

Overview of the economic, social and political development of the Russian North. Also offered at the graduate level, with additional or different requirements, as East European Studies 55.509, for which additional credit is precluded.

Precludes additional credit for East European Studies 55.402★ (if taken before 1995-96).

Prerequisite: Permission of the Institute.

Seminar three hours a week.

East European Studies 55.410★

**Nation-Building in Central and Eastern Europe**

Processes of nation-building in the region examined in terms of a particular country, or set of countries. Also offered at the graduate level, with additional or different requirements, as East European Studies 55.510, for which additional credit is precluded.

Prerequisite: Political Science 47.314, or 47.328★, or 47.329★ or History 24.360; or permission of the Institute.

Seminar three hours a week.

East European Studies 55.411★

**The Balkans**

Differing paths of transition from communist rule. Sources of friction and conflict in the region. Emphasis on the Yugoslav crisis and its extra-regional dimensions.

Prerequisites: Political Science 47.314, or 47.328★ or 47.329★, or History 24.359★, or 24.360; or permission of the Institute.

Seminar three hours a week.

East European Studies 55.490

**Tutorial in Central/East European and Russian-Area Studies**

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

East European Studies 55.491★

**Tutorial in Central/East European and Russian-Area Studies**

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

East European Studies 55.492★

**Tutorial in Central/East European and Russian-Area Studies**

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

East European Studies 55.498

**Honours Essay**

Topic and faculty supervisor to be selected in consultation with Honours Adviser. Oral defense of essay is required.

Prerequisites: Fourth-year standing, a GPA of 9.0 or better in courses qualifying for credit in East European Studies; and permission of the Institute.



# Chemistry (Science)

203 Steacie Building  
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## Academic Administration

**Chair,** G.W. Buchanan

**Supervisor of Graduate Studies,** R.J. Crutchley

**Adviser of Undergraduate Studies,** R.A. Shigeishi

## Teaching Staff

### Professors

**J.W. ApSimon**, B.Sc., Ph.D. (Liverpool) • **Gerald Wallace Buchanan**, B.Sc., Ph.D. (Western Ontario) • **Bryan R. Hollebone**, B.Sc. (Carleton), Ph.D. (London) • **Peeter Kruus**, B.Sc. (Toronto), Lic.Tech. (Denmark), Ph.D. (Toronto) • **K.B. Storey**, B.Sc. (Calgary), Ph.D. (British Columbia) F.R.S.C. • **Chishium S. Tsai**, B.Sc. (Taiwan), M.Sc., Ph.D. (Purdue) • **Donald C. Wigfield**, B.Sc., D.Sc. (Birmingham), Ph.D. (Toronto) • **James S. Wright**, B.S. (Stanford), Ph.D. (California at Berkeley)

### Associate Professors

**Alexis D.O. Bawagan**, B.S. (Philippines), M.Sc. (Houston), Ph.D. (British Columbia) • **Peter H. Buist**, B.Sc., Ph.D. (McMaster) • **Robert J. Crutchley**, B.Sc. (Toronto), Ph.D. (York) • **Edward P.C. Lal**, B.Sc., M.Phil. (Hong Kong), Ph.D. (Florida) • **Ronald A. Shigelshi**, B.Sc. (Toronto), Ph.D. (Queen's) • **Zhi Yuan Wang**, B.Sc. (Peking), Ph.D. (McGill) • **R.H. Wightman**, B.Sc., Ph.D. (New Brunswick)

### Instructor

**R.C. Burk**, B.Sc., M.Sc., Ph.D. (Carleton)

### Natural Sciences and Engineering Research Council University Research Fellow

**R.J. Crutchley**

### Distinguished Research Professor

**C.L. Chakrabarti**

### Adjunct Research Professors

**M.H. Back** • **O.E. Edwards** • **M. Fingas**, Environment Canada • **D.C. Gregoire**, Natural Resources Canada • **P. Handa**, National Research Council Canada • **K.U. Ingold**, National Research Council Canada • **J.F. Lawrence**, Health Canada • **J. David Miller** • **R.J. Norstrom**, Environment Canada • **J.A. Ripmeester**, National Research Council Canada • **K.W.M. Siu**, National Research Council Canada • **R.E. Sturgeon**, National Research Council Canada

### Adjunct Professor

**D.R. Wiles**

### Sessional Lecturer

**P. Wolff**

## General Information

Students intending to enter a program in Chemistry should have a strong background in mathematics and physics as well as in chemistry. The four-year Honours and three-year Major programs in Chemistry are described below. Students interested in continuing their careers in secondary school teaching, graduate studies or as professional chemists are advised to enrol in the Honours program.

Combined Honours programs in Chemistry and Computer Science and Chemistry and Geology are available as described below.

While Combined Honours in Chemistry and Mathematics are not formally available, strong continuation groupings in Mathematics can be arranged under the Honours Chemistry program. Secondary specialization in Biology can be arranged under the Honours Chemistry program, or under the joint program in Honours Biochemistry. A strong Chemistry component is possible also within the degree programs for Integrated Science Studies (see p. 295) or

Environmental Science (see p. 243). In evaluating students for entry with advanced standing, the Department of Chemistry transfers credits but not grades.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 117), in addition to all departmental regulations and requirements as set out below.

The designation of Honours degree awarded for students in the Combined Honours program is determined on the basis of their GPA for all required credits in the two Major subjects as specified in the respective program requirements.

For students in the Honours program, the designation of Honours degree will be determined by a student's GPA on all required Chemistry courses.

## Honours Program

The total program (including First year) must contain:

1. Chemistry 65.100, 65.211★, 65.212★, 65.223★, 65.224★, 65.232★, 65.233★, 65.311★, 65.315★, 65.321★, 65.325★, 65.353★, 65.354★, 65.355★, 1.0 credit at the 400-level in Chemistry or Biochemistry 63.310, 0.5 credit at the 300- or 400-level in Chemistry and Chemistry 65.498;
2. Mathematics 69.107★, 69.117★, 69.207★ and an additional 0.5 Mathematics credit at the 200-level;
3. Physics 75.101★ and 75.102★;
4. 0.5 Science Continuation credit not in Chemistry;
5. Computer Science 95.104★ or approved equivalent;
6. 1.0 First-year Science credit (as required in the First-year program);
7. 2.0 arts or social science credits (see Faculty of Science regulations);
8. 2.0 additional Science credits. Normally these will be chosen either from non-compulsory Chemistry courses or other science continuation courses. Students who wish to broaden and strengthen a non-Science interest by substituting non-Science courses must obtain written permission from the Undergraduate Adviser prior to registration;
9. 1.0 free credit.

## Honours Project

All Honours candidates are required, as part of Chemistry 65.498, in the Fourth-year to carry out a substantial project and to write a report to their supervisor. Towards the end of the Third year, prospective candidates should obtain pertinent information from the departmental office. Brief progress reports are to be presented to the supervisor and committee members early in November and February. The deadline for submission of the final typed report is the first Monday in April. Honours students are also expected to attend departmental seminars in their specialty. The report and its defence are heavily weighted in determining the class of Honours awarded. The grade of *In Progress* will be restricted to unusual circumstances and be subject to approval by the Department.

## Honours in Computational Chemistry

### First Year

Chemistry 65.100;  
Computer Science 95.102★, 95.105★, 95.106★;  
Mathematics 69.107★, 69.117★;  
Biology 61.103★;  
Physics 75.101★;  
0.5 arts or social science credit.

### Second Year

Chemistry 65.211★, 65.212★, 65.223★, 65.226★;  
Computer Science 95.202★, 95.203★, 95.204★;  
Mathematics 69.207★;  
1.0 arts or social science credit.

### Third Year

Chemistry 65.311★, 65.312★, 65.316★, 65.321★, 65.353★, 65.354★;  
Computer Science 95.304★;  
Biochemistry 63.310;  
0.5 arts or social science credit.

### Fourth Year

Chemistry 65.446★; 0.5 credit Chemistry or Biochemistry at the 300- or 400-level; 0.5 credit Chemistry or Biochemistry at the 400-level; Computer Science 95.305★ or 95.386★, 0.5 credit at the 300- or 400-level;  
Chemistry 65.498 or Biochemistry 63.498;  
0.5 Science Option credit;  
1.0 Free elective credit.

## Honours Chemistry with a Minor in Business

This program is intended for students interested in an honours chemistry program who wish to keep open a business option. Like the Honours Chemistry program it is accredited by the Chemical Society of Canada and thus will allow entry into graduate schools in chemistry.

The Minor will be earned through completion of 5.0 specified business credits with a GPA of 6.0 or better. On successful completion of all requirements, the designation "Minor in Business" will be added to the transcript and degree certificate.

The program requirements are as follows:

1. Chemistry 65.100, 65.211★, 65.212★, 65.223★, 65.224★, 65.232★, 65.233★, 65.311★, 65.315★, 65.321★, 65.325★, 65.353★, 65.354★, 65.355★; 1.0 credit at the 400-level in Chemistry, or Biochemistry 63.310; 0.5 credit at the 300- or 400-level in Chemistry, and Chemistry 65.498;
2. Mathematics 69.107★, 69.117★, 69.207★ and an additional 0.5 Mathematics credit at the 200-level;
3. Physics 75.101★ and 75.102★;
4. 0.5 Science Continuation credit not in Chemistry;
5. Computer Science 95.104★ or approved equivalent;
6. 1.0 First-year Science credit (as required in the First-year program);
7. Business 42.101★, 42.102★, 42.211★, 42.224★, 42.240★, 42.254★ and 2.0 other Business credits for which the student has the required prerequisites.

**Note:** Possible Business electives depending on the prerequisites are listed under the School of Business. However, Business 42.230★ and 42.308★ may not be taken for credit in this program.

## Combined Honours in Chemistry and Computer Science

A GPA of 6.5 or better must be maintained in both Chemistry and Computer Science courses along with a GPA of 5.0 or better overall to remain in the program.

### First Year

Chemistry 65.100;  
Computer Science 95.102★, 95.105★, 95.106;  
Mathematics 69.107★, 69.117★;  
Biology 61.103★;  
Physics 75.101★;  
0.5 arts or social science credit.

### Second Year

Chemistry 65.211★, 65.223★, 65.226★;  
Computer Science 95.202★, 95.203★, 95.204★;



Mathematics 69.207★, 69.217★;  
1.0 arts or social science credits.

#### Third Year

Chemistry 65.311★, 65.312★, 65.316★, 65.353★, 65.354;  
Computer Science 95.300★, 95.304;  
Biochemistry 63.310;  
0.5 arts or social science credit.

#### Fourth Year

Chemistry 65.321★, 65.446★;  
Computer Science 95.305★, 95.384★, 95.386★, 0.5 credit at the 400-level;  
Chemistry 65.498 or Computer Science 95.495★ and 0.5 credit at the 400-level in Computer Science;  
1.0 Free elective credit.

### Combined Honours in Chemistry and Geology

*Program Advisers:* R.A. Shigeishi and G.B. Skippen

A grade of C+ or better in both Chemistry 65.100 and Geology 67.100 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Chemistry 65.100, 65.211★, 65.212★, 65.232★, 65.233★, 65.353★, 65.354★ and 1.0 Chemistry credit at the 400-level;
2. Geology 67.100, 67.223★, 67.225★, 67.228★, 67.281★ and 1.0 Geology credit at the 400-level;
3. Either Chemistry 65.498 or Geology 67.498. Students should consult their program adviser about selection of this in their Third year;
4. 1.0 Chemistry or Geology credit;
5. Mathematics 69.107★, 69.117★, 69.207★ and an additional 0.5 Mathematics credit at the 200-level;
6. Physics 75.101★ and 75.102★; or approved equivalents;
7. 2.0 Science credits, of which one must be outside Chemistry and Geology;
8. 2.0 arts or social science credits;
9. 1.0 free credit;
10. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German or Russian.

A typical program is as follows:

#### First Year

Chemistry 65.100;  
Geology 67.100;  
Mathematics 69.107★ and 69.117★;  
Physics 75.101★ and 75.102★;  
1.0 arts or social science credit.

#### Second Year

Chemistry 65.211★, 65.212★ and 65.232★, 65.233★;  
Geology 67.223★, 67.225★, 67.228★ and 67.281★;  
Mathematics 69.207★ and 0.5 Mathematics credit at the 200-level.

#### Third Year

Chemistry 65.353★ and 65.354★;  
Geology 67.323★ and 67.324★;  
1.0 Chemistry or Geology credit;  
1.0 Science credit;  
1.0 arts or social science credit.

#### Fourth Year

Chemistry 65.498 or Geology 67.498;  
1.0 Chemistry credit at the 400-level;  
1.0 Geology credit at the 400-level;  
1.0 Science credit;  
1.0 elective credit.

## The Co-operative Education Option

General information on Co-op programs can be found on p. 39.

Co-operative education formally integrates the students' academic experience with work experience in industry and government. Work opportunities, which are available on a competitive basis, are coordinated to complement the student's course work and interests. Practical work experience provides insights and opportunities for development which help prepare an individual for a career in Chemistry.

### Operation of the Co-operative Option

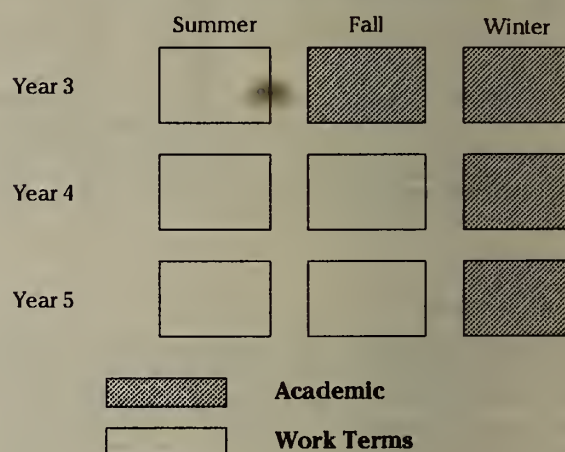
The stream is administered by the Co-operative Program Committee which is responsible for securing potential employers, arranging interviews, and generally managing the program. The details of the program are to be found in the *Chemistry Co-op Student Handbook*, which describes the entry requirements, the job, selection process, the conditions of employment, the requirements of the student during the work term including the Work Term Report and its evaluation.

### Admission Requirements

Students are eligible to enter the Co-op Option in one of two ways: (i) directly from high school with a grade of 80 percent or better in OAC Chemistry and OAC grades sufficient to be accepted into Honours Chemistry (ii) after completion of 5.0 or more credits at Carleton University with a GPA of 8.0 or better in Chemistry and 6.5 overall. Students must be registered as full time in the Honours Chemistry program and be eligible to work in Canada.

The proposed co-operative work term schedule is shown below in Figure 1.

Figure 1. Co-operative Work Term Schedule



### Continuance in the Program

Students must maintain a GPA of 8.0 or better in Chemistry and 6.5 or better overall.

During work terms, students must register in one of the five Work Term Courses: 65.394★, 65.395★, 65.396★, 65.495★, or 65.496★. To continue in the program students must complete each work term and submit a Work Term Report which is judged to be "Satisfactory".

## Major Program

The total program (including First year) must contain:

1. Chemistry 65.100, 65.211★, 65.212★, 65.223★, 65.224★, 65.232★, 65.233★, and 2.0 credits at the 300-level including Chemistry 65.311★, 65.353★ and at least one of 65.315★, 65.325★ or 65.355★. (Note: Chemistry 65.355★ requires both Chemistry 65.353★ and 65.354★ as prerequisites.)
2. Mathematics 69.107★, 69.117★, 69.207★ and an additional 0.5 mathematics credit at the 200-level;
3. Physics 75.101★ and 75.102★;
4. 0.5 Science Continuation credit not in Chemistry;
5. Computer Science 95.104★ or approved equivalent;
6. 1.0 First-year Science credit (as required in the First-year program);
7. 2.0 arts or social science credits (see Faculty of Science regulations);
8. 1.0 additional Science credit. Normally this will be chosen either from non-compulsory Chemistry courses or other science continuation courses;
9. 1.0 free credit.

In addition to the Faculty requirement of a C- average in Chemistry, the Department also requires a grade of C- or better in at least half of all Chemistry courses taken.

## Major in Computational Chemistry

### First Year

Chemistry 65.100;  
Computer Science 95.102★, 95.105★, 95.106★;  
Mathematics 69.107★, 69.117★;  
Biology 61.103★;  
Physics 75.101★;  
0.5 arts or social science credit.

### Second Year

Chemistry 65.211★, 65.223★, 65.226★;  
Computer Science 95.202★, 95.203★, 95.204★;  
Mathematics 69.207★;  
1.0 arts or social science credit;  
0.5 Free elective credit.

### Third Year

Chemistry 65.311★, 65.312★, 65.316★, 65.321★, 65.353★;  
Computer Science 95.304★;  
Biochemistry 63.310;  
0.5 arts or social science credit;  
0.5 Free elective credit.

## Graduate Program

The Department of Chemistry offers studies leading to the degree of Master of Science and to the degree of Doctor of Philosophy. For further details consult the *Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

**Note:** Under special circumstances, students not having the indicated prerequisites may register for courses by obtaining permission of the Department; this normally means permission of the instructor for that course.

A breakage deposit of \$25.00 (potentially refundable) will be levied for most laboratory courses.

Chemistry 65.010

### Introductory Chemistry

Introduction to fundamental laws and principles of chemistry, and the techniques needed to solve numerical problems. Laboratory component introduces common lab methods and techniques, and reinforces some of the lecture material. Precludes additional credit for OAC Chemistry. Prerequisite: Ontario Grade 11 Chemistry or equivalent. Lectures three hours a week, tutorial one hour a week.

Chemistry 65.100

### General Chemistry

Solution equilibria, acid and base chemistry; electronic structure of atoms; energy states and spectra; descriptive chemistry and periodic properties of the elements; the structure of covalent and ionic substances; energy relationships and theories in bonding, equilibria, and rates of reactions. The laboratory course gives training in fundamental techniques and methods of experimental work in analysis, synthesis and other aspects of chemistry. Precludes additional credit for Chemistry 65.111★. Prerequisites: OAC in Calculus and Chemistry, or equivalent. This course is intended for students in all programs who plan to take further chemistry courses. Lectures three hours a week, laboratory and tutorial three hours a week.

Chemistry 65.103★

### The Chemistry of Food, Health and Drugs

A course describing aspects of chemistry relating to food, food additives, drugs (both illicit and beneficial) and their relation to metabolism and health. Topics may include: proteins, carbohydrates, fats, drugs, food additives, vitamins and cofactors, enzymes, steroids, electrolyte and pH balance, trace elements. Designed for students in Arts and Social Science or Public Affairs and Management. Available only as a free option for Science students. Course enrolment may be limited. Prerequisite: A course in Chemistry (e.g. Ontario Grade 11). Lectures three hours a week.

Chemistry 65.111★

### Chemistry for Engineering Students

Topics include stoichiometry, atomic and molecular structure, thermodynamics and chemical equilibrium, acid-base chemistry, carbon dioxide in water, alkalinity, precipitation, electrochemistry, kinetics and basic organic chemistry. Laboratory component emphasizes techniques and methods of basic experimental chemistry. Precludes additional credit for Chemistry 65.100. Prerequisites: OAC in Calculus and Chemistry, or equivalent. Lectures three hours a week, laboratory three hours a week.

Chemistry 65.211★

### Physical Chemistry I

The principles of thermodynamics. Development of thermodynamic functions, enthalpy, entropy and free energy and their applications to biochemical and chemical processes. Brief introduction to Fortran programming. Precludes additional credit for Chemistry 65.210. Students presenting both Chemistry 65.211★ and 65.227★ or 65.223★ will not be able to receive additional credit for 65.280★. Students in the B.Sc. program with Chemistry 65.223★ will only be able to use 65.280★ in the free elective category. Prerequisites: Chemistry 65.100; Mathematics 69.107★ and 69.117★; OAC Physics or Physics 75.107★ and 75.108★. Lectures three hours a week, problems one hour a week, laboratory three hours a week.

Chemistry 65.212★

### Physical Chemistry II

Further development of thermodynamic equations and their applications to phase equilibria, chemical equilibria, electrochemistry, transport properties and kinetics. Precludes additional credit for Chemistry 65.210. Prerequisite: Chemistry 65.211★. Lectures three hours a week, problems one hour a week, laboratory three hours a week.



**Chemistry 65.223★****Organic Chemistry I**

The structure, organization, and scope of organic chemistry. The course includes molecular structures of well-known and important organic chemicals, types of chemical reactions in organic chemistry, and spectroscopic methods used in identifying organic chemicals. The laboratory gives experience in the handling and purification of organic compounds, organic chemical reactions, and the use of infrared spectroscopy.

Precludes additional credit for Chemistry 65.220 and 65.227★.

Students presenting both Chemistry 65.223★ and 65.211★ will not be able to receive additional credit for 65.280★. Students in the B.Sc. program with Chemistry 65.223★ will only be able to use 65.280★ in the free elective category.

Prerequisite: Chemistry 65.100.

Lectures three hours a week, laboratory three hours a week.

**Chemistry 65.224★****Organic Chemistry II**

Further discussion of the chemical bonding in organic compounds, nomenclature, stereochemistry, and a systematic coverage of the chemical reactions of the organic functional groups. The laboratory gives further experience in organic chemical reactions, and includes the use of infrared spectroscopy and other techniques to determine the structure of unknown organic compounds.

Precludes additional credit for Chemistry 65.228★ or 65.226★.

Prerequisite: Chemistry 65.220★ or 65.223★.

Lectures three hours a week, laboratory three hours a week.

**Chemistry 65.226★****Organic Chemistry IV**

Further discussion of the chemical bonding in organic compounds, nomenclature, stereochemistry, and a systematic coverage of the chemical reactions of the organic functional groups. The laboratory consists of computational experiments and calculations on organic structures and reactions.

Precludes additional credit for Chemistry 65.220, 65.224★, or 65.228★.

Prerequisite: Chemistry 65.223★ or 65.227★.

Lectures three hours a week, laboratory three hours a week.

**Chemistry 65.227★****Introduction to Organic Chemistry I**

The structure, organization, and scope of organic chemistry. The course includes molecular structures of well-known and important organic chemicals, types of chemical reactions in organic chemistry, and spectroscopic methods used in identifying organic chemicals.

Precludes additional credit for Chemistry 65.220 and 65.223★.

Students presenting both Chemistry 65.227★ and 65.211★ will not be able to receive additional credit for 65.280★. Students in the B.Sc. program with Chemistry 65.227★ will only be able to use 65.280★ in the free elective category.

Prerequisites: Chemistry 65.100.

Lectures three hours a week.

**Chemistry 65.228★****Introduction to Organic Chemistry II**

Further discussion of the chemical bonding in organic compounds, nomenclature, stereochemistry, and a systematic coverage of the chemical reactions of the organic functional groups.

Precludes additional credit for Chemistry 65.220, 65.224★ or 65.226★.

Prerequisite: Chemistry 65.227★ or 65.223★.

Lectures three hours a week.

**Chemistry 65.232★****Analytical Chemistry**

The analytical measurement process. Sampling and sample preparation techniques. Instrumental methods of analysis including absorption spectrophotometry (UV-visible, IR), molecular fluorimetry, atomic spectrometry, inductively coupled plasma atomic emission and ion chromatography. Experimental methodologies for various organic, inorganic, geological and industrial analyses.

Precludes additional credit for Chemistry 65.230.

Prerequisites: Chemistry 65.100 or 65.111★, Mathematics 69.107★ and 69.117★.

Lectures three hours a week, laboratory three hours a week.

**Chemistry 65.233★****Analytical Chemistry**

Analytes in biological and environmental matrices are separated by solvent or solid phase extraction, before they are determined by chromatographic, mass spectrometric and electrochemical methods. Topics of social and economic interests will be covered, including drugs, food, lipids, proteins, pesticides, dioxins, and PCBs.

Precludes additional credit for Chemistry 65.230 and 65.231★.

Prerequisites: Chemistry 65.100 or 65.111★, Mathematics 69.107★ and 69.117★.

Lectures three hours a week, laboratory three hours a week.

**Chemistry 65.280★****Foundations for Environmental Chemistry**

A basis of chemistry needed to understand the environment: composition of the atmosphere and natural waters; equilibrium; surface properties; kinetics and spectroscopy; physical and chemical properties of chemicals in the environment. This is a limited enrolment course; therefore top priority will be given to students registered in the Environmental Science program.

Students presenting both Chemistry 65.223★ and 65.211★ will not be able to receive additional credit for 65.280★. Students in the B.Sc. program with Chemistry 65.223★ will only be able to use 65.280★ in the free elective category.

Prerequisites: Chemistry 65.100, or 65.111★; and Mathematics 69.107★ or equivalents.

Lectures three hours a week, laboratory three hours a week.

**Chemistry 65.311★****Quantum Chemistry**

Classical equations of motion, harmonic oscillator, diatomic and polyatomic molecules, molecular mechanics, quantum mechanics, Schrodinger equation and wave functions, vibrational spectra, hydrogen atom, quantum numbers, electronic spectra, bonding in small molecules.

Prerequisites: Chemistry 65.211★, Mathematics 69.207★.

Lectures and problems three hours a week.

**Chemistry 65.312★****Methods of Computational Chemistry**

Molecular orbital theory of organic and inorganic chemistry. Applications of computational chemistry to chemical bonding, aromaticity, molecular spectra. Semiempirical and *ab initio* electronic structure theory. Comparison of theoretical methods used to obtain molecular properties. Introduction to statistical thermodynamics.

Prerequisite: Chemistry 65.311★.

Lectures and problems three hours a week.

**Chemistry 65.315★****Experimental Physical Chemistry**

A laboratory-based course designed to acquaint students with advanced concepts in physical chemistry and the use of more advanced physico-chemical techniques in other areas of chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.212★ and at least one of 65.223★, 65.232★, 65.233★, 65.311★ (may be taken concurrently).

Note: Withdrawal from Chemistry 65.311★ will require deregistration from Chemistry 65.315★.

Laboratory and seminars four hours a week.

**Chemistry 65.316★****Computational Chemistry Methods Laboratory**

Use of PC Spartan. Molecular mechanics models. Geometry optimization, vibration frequencies, IR spectra, animation of normal modes. *Ab initio* and semiempirical models. Selection of an appropriate model; comparison of results. Reaction thermochemistry. Molecular structure. Transition states and activation energies. Display of graphical surfaces.

Prerequisite: Chemistry 65.311★.

Laboratory four hours a week.



## Chemistry 65.321★

**Advanced Organic Chemistry I**

Instrumental methods for determining organic structures. Selected organic reactions with emphasis on mechanisms and reactive intermediates.

Prerequisite: Chemistry 65.224★.

Lectures three hours a week.

## Chemistry 65.322★

**Advanced Organic Chemistry II**

Continued mechanistic survey of additional organic reactions with emphasis on synthetic usefulness and stereochemistry. Interspersed with selected topics such as instrumental methods, photochemistry, literature of organic chemistry, natural and synthetic polymers, heterocycles, terpenes and alkaloids.

Prerequisite: Chemistry 65.321★ or equivalent.

Lectures three hours a week.

## Chemistry 65.325★

**Experimental Organic Chemistry**

A laboratory-based course including advanced concepts and techniques in organic synthesis, structure determination, and the rates and mechanisms of reactions. Students are responsible for literature surveys, acquisition of theoretical background, and design of experimental procedures.

Prerequisite: Chemistry 65.224★, 65.321★ or Biochemistry 63.310 (may be taken concurrently).

**Note:** Withdrawal from Chemistry 65.321★ will require deregistration from Chemistry 65.325★.

Laboratory four hours a week.

## Chemistry 65.335★

**Advanced Analytical Chemistry Laboratory**

Advanced instrumentally based techniques of analysis. Emphasis on identification and quantitation of low-level contaminants in environmental matrices using chromatographic and spectroscopic methods, including sampling, cleanup, measurement and reporting of results.

Precludes additional credit for Chemistry 65.230.

Prerequisites: Chemistry 65.232★ and 65.233★.

Laboratory four hours a week.

## Chemistry 65.353★

**Inorganic Chemistry I**

The concepts of atomic theory, elemental properties and the periodic system, resonance, introduction to molecular orbital theory, main group chemistry, transition metal complexes, metalloproteins and solid state materials.

Prerequisite: Chemistry 65.100.

Lectures three hours a week.

## Chemistry 65.354★

**Inorganic Chemistry II**

Symmetry and the application of group theory to spectroscopy and bonding, ligand field theory, solid state and molecular magnetic properties, organometallic chemistry, and electron transfer reactions.

Prerequisite: Chemistry 65.353★.

Lectures three hours a week.

## Chemistry 65.355★

**Experimental Inorganic and Analytical Chemistry**

A laboratory-based course including advanced concepts and techniques in inorganic synthesis, structure determination and analytical chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.211★, 65.232★, 65.233★, 65.353★ and 65.354★ (may be taken concurrently).

**Note:** Withdrawal from or a final grade of *F* in Chemistry 65.353★ will require deregistration from Chemistry 65.355★.

Laboratory four hours a week.

## Chemistry 65.370★

**Industrial Applications of Chemistry**

Uses of chemistry in a number of industries: fertilizers, electrochemical, metallurgical, petrochemical, pulp and paper, plastics, pharmaceutical. Interaction of chemistry with economic, political,

engineering, environmental, health, legal considerations. Guest lecturers.

Prerequisite: Chemistry 65.211★ and one of 65.227★ or 65.223★.

## Chemistry 65.380★

**The Chemistry of Environmental Pollutants**

Inorganic and organic environmental pollutants: their toxicology, production, use pattern and known effects on the environment. Aspects of risk and regulation. Chemistry involved in water and sewage treatment.

Prerequisite: Chemistry 65.227★ or 65.223★ or 65.280★.

Lectures three hours a week.

## Chemistry 65.394★

**Co-operative Work Term Report 1**

These work terms provide practical experience for students enrolled in the Co-operative option. To receive credit, students must receive satisfactory evaluations from their work term employer and in their written and oral reports. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Chemistry Co-operative option and permission of the Department.

## Chemistry 65.395★

**Co-operative Work Term Report 2**

These work terms provide practical experience for students enrolled in the Co-operative option. To receive credit, students must receive satisfactory evaluations from their work term employer and in their written and oral reports. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Chemistry Co-operative option and permission of the Department.

## Chemistry 65.396★

**Co-operative Work Term Report 3**

These work terms provide practical experience for students enrolled in the Co-operative option. To receive credit, students must receive satisfactory evaluations from their work term employer and in their written and oral reports. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Chemistry Co-operative option and permission of the Department.

## Chemistry 65.495★

**Co-operative Work Term Report 4**

These work terms provide practical experience for students enrolled in the Co-operative option. To receive credit, students must receive satisfactory evaluations from their work term employer and in their written and oral reports. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Chemistry Co-operative option and permission of the Department.

## Chemistry 65.496★

**Co-operative Work Term Report 5**

These work terms provide practical experience for students enrolled in the Co-operative option. To receive credit, students must receive satisfactory evaluations from their work term employer and in their written and oral reports. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Chemistry Co-operative option and permission of the Department.

## Chemistry 65.410★

**Advanced Topics in Physical Chemistry I**

Principles of Group Theory as applied to Chemistry. Point groups, character tables, symmetry orbitals, molecular orbitals, aromaticity, allowed and forbidden reactions, sandwich complexes. Selection rules in spectroscopy, molecular vibrations.

Prerequisites: Chemistry 65.312★ or Physics 75.362★.

Lectures three hours a week.

## Chemistry 65.412★

**Advanced Topics in Physical Chemistry II**

Statistical thermodynamics, energy states, equilibrium, partition functions for diatomic molecules. Chemical kinetics: rate laws, solution of differential equations, transition state theory, bimolecular reactions in gases and in solution, chain reactions, catalysis, atmospheric chemical reactions and photochemistry.

Prerequisite: Chemistry 65.312★.

Lectures and seminars three hours a week.



## Chemistry 65.413★

**Colloid and Surface Chemistry**

Properties and stability of colloidal systems, theories of absorption, heterogeneous catalysis, and interfacial phenomena.

Prerequisite: Chemistry 65.212★.

## Chemistry 65.422★

**Advanced Topics in Organic Chemistry I**

Topics include 2-dimensional <sup>1</sup>H and <sup>13</sup>CNMR spectroscopy and structure determination of complex organic molecules. Also offered at the graduate level, with additional requirements, as Chemistry 65.547★, for which additional credit is precluded.

Prerequisite: Chemistry 65.321★.

Lectures and seminars three hours a week.

## Chemistry 65.423★

**Advanced Topics in Organic Chemistry II**

Synthetic organic chemistry. The application of reactions to the synthesis of organic molecules. Emphasis on design of sequences, new reagents, and stereoselectivity.

Prerequisites: Chemistry 65.321★ and 65.322★.

Lectures and seminars three hours a week.

## Chemistry 65.424★

**Organic Polymer Chemistry**

Introduction to basic principles of polymer chemistry, industrial and synthetic polymers, different types of polymerization and polymer characterization. Study of commodity plastics, engineering thermoplastics, and specialty polymers, with emphasis on their synthesis. Also offered at the graduate level, with additional or different requirements, as Chemistry 65.546, for which additional credit is precluded.

Prerequisites: Chemistry 65.321★ or equivalent.

Lectures three hours a week.

## Chemistry 65.431★

**Advanced Topics in Analytical Chemistry I**

Trace and ultratrace analytical chemistry. Sampling and sample preservation. The problems of the blank. Trace and ultratrace analysis. Sampling and sample preparation. Atomic absorption, fluorescence and emission spectroscopy.

Prerequisites: Chemistry 65.211★; 65.232★ or 65.233★.

Given in alternate years with Chemistry 65.432★.

## Chemistry 65.432★

**Advanced Topics in Analytical Chemistry II**

Solutions and separations in analytical chemistry. Stability of aqueous solutions of standards and samples. Complex formation, multi-step and competing equilibria and their application to the design of selective methods of separation and determination. Electroanalytical techniques. Electroanalytical chemistry of aqueous solutions. Phase equilibria and solvent extraction.

Prerequisites: Chemistry 65.211★; 65.232, or 65.233★.

Text: Laitinen and Harris, *Chemical Analysis, Second Edition*.

Given in alternate years with Chemistry 65.431★.

Lectures and seminars three hours a week.

## Chemistry 65.446★

**Pharmaceutical Drug Design**

Important elements of rational drug design. Ligand-receptor interactions, structure-activity relationships, molecular modeling of pharmacophores, structure and mechanism-based approaches to drug design. Enzyme inhibition in chemotherapy and design of anti-viral drugs.

Prerequisite: Chemistry 65.211★, 65.223★ or 65.227★ and Biochemistry 63.310.

Lectures and laboratory five hours a week.

## Chemistry 65.452★

**Radiochemistry**

A study of nuclear stability and decay; chemical studies of nuclear phenomena. Applications of radioactivity.

Prerequisites: Chemistry 65.212★, 65.232★ and 65.233★; or permission of the Department.

Reference text: Friedlander, Kennedy, Macias and Miller, *Nuclear and Radiochemistry*.

Lectures and seminars three hours a week.

## Chemistry 65.453★

**Advanced Topics in Inorganic Chemistry I**

Static and dynamic structures of inorganic coordination compounds. Group-theoretical description of vibrational and electronic excited states. Ligand-field, parameters, bond covalence, prediction of inorganic reaction paths.

Precludes additional credit for Chemistry 65.450★.

Prerequisite: Chemistry 65.354★ or equivalent.

Lectures three hours a week.

## Chemistry 65.454★

**Advanced Topics in Inorganic Chemistry II**

Reactivity of inorganic coordination compounds. Thermodynamic and kinetic factors affecting reactivity. Industrial and biochemical processes catalyzed by metal coordination compounds. Experimental methodologies, data analysis and rate law evaluation used to obtain reaction mechanisms leading to improved methods of catalysis.

Prerequisite: Chemistry 65.354★ or equivalent.

Lectures three hours a week.

## Chemistry 65.470★

**Special Topics in Chemistry**

A topic of current interest in any branch of chemistry. Only one special topics course may be presented for credit.

Prerequisite: Permission of the Department.

## Chemistry 65.480★

**Atmospheric Chemistry**

Topics to be covered in this course include: properties of the natural atmospheric constituents; biogeochemical cycles involving gases; chemical reactions in the atmosphere; anthropogenic atmospheric pollutants (e.g., chlorofluorocarbons, sulphur and nitrogen oxides, photochemical smog, etc.), their sources and their effects on the biosphere. Fundamentals of the structure of the relevant molecules are discussed to explain their spectral properties and chemical reactivities. Some fundamentals of gas properties are also included. Experimental methods for studying the atmosphere are covered briefly.

Prerequisite: Chemistry 65.211★ or 65.280★.

Lectures three hours a week.

## Chemistry 65.498

**Research Project and Seminar**

Senior students in Honours Chemistry carry out a research project under the direction of one of the members of the Department. A written report and an oral presentation of the work are required before a grade can be assigned. Students must successfully complete at least two of Chemistry 65.315★, 65.325★ and 65.355★ before beginning their Chemistry 65.498 project, unless they have obtained the express consent of the Department.

Laboratory and associated work equivalent to at least eight hours a week for two terms.

# Child Studies

## (Arts and Social Sciences)

2216 Dunton Tower  
Telephone: 520-2368

### Academic Administration

Program Co-ordinator, Tina Daniels

Members of the Committee, Robert Coplan, Ann Croll, Charles Gordon, Karen March, Dominique Marshall, Shelley Parlow

### General Information

The interdisciplinary program in Child Studies was developed to meet the need for advanced study in the field of early childhood education (ECE). The program leads to both B.A. and B.A. (Honours) degrees. Articulation agreements with Algonquin College of Applied Arts and Technology in Ottawa and Loyalist College in Belleville allow graduates with the ECE diploma from these colleges to apply for admission into the program. Successful applicants will be granted up to a maximum of 5.0 credits on admission. Applicants from other colleges are welcome and will be considered on an individual basis.

Students enter the program in one of two ways. Admission to *Category A (Sequential)* requires a completed ECE diploma from a CAAT two-year Early Childhood Education program (or equivalent). Students can graduate with a B.A. degree after two years of full-time study, or a B.A. (Honours) degree after three years.

Applicants who do not have the ECE diploma and who wish to be considered for *Category B (Concurrent)* should make an application to the Extended ECE diploma program at Algonquin College and will also be expected to register as a Special Student at Carleton University through the School of Continuing Education. A separate application for admission into the Child Studies program at Carleton must be made by June 1 of the third year of study. It is expected that eligible students will graduate with the ECE diploma from Algonquin College after three years of study, and either a B.A. degree from Carleton with one additional year of study, or a B.A. (Honours) degree with two additional years of study.

This program is designed to enable students to develop an interdisciplinary perspective on early childhood. To this end, it introduces students to a range of social, psychological, cultural, ethical and other factors affecting young children and their families in a Canadian context, as well as to the empirical methods and techniques used to study early childhood. Honours students will be offered the opportunity to study a particular area of interest (e.g., Developmental, Sociocultural, Managerial). The program is administered by the Institute of Interdisciplinary Studies (see p. 297 for the Institute's general listing).

### Admission Requirements

Enrolment into the program is limited. Successful applicants must demonstrate a high level of personal enthusiasm and professionalism, excellent communication skills (oral and written) and evidence of previous academic success. Further information may be obtained from the Program Co-ordinator to whom applications for admission in *Category A (Sequential)* should be made, presenting:

- (a) the diploma in Early Childhood Education from Algonquin or Loyalist College or an equivalent Early Childhood Education program from another institution;
- (b) a B+ average overall or better at the college level;
- (c) satisfactory performance in field placements;
- (d) three letters of reference, including at least one letter from a

faculty member in the ECE program, and one letter from the director of a child care centre;

- (e) a letter of application, including a statement of professional goals and expectations of the program and a curriculum vitae.

(*Category B applicants*)

*Category B (Concurrent)* applicants must meet admission requirements and regulations for both Algonquin College and Carleton University. Separate applications must be made to enrol in the extended ECE program at Algonquin College and also to the School of Continuing Education at Carleton for registration as a Special student. Students should consult with the Program Co-ordinator before registering for courses at Carleton. After three years of study, candidates may apply to the Program Coordinator for admission into the Child Studies program under *Category B (Concurrent)*, presenting:

- (a) the diploma in Early Childhood Education from Algonquin College;
- (b) a B+ average overall or better at the college level;
- (c) satisfactory performance in field placements;
- (d) three letters of reference, including at least one letter from a faculty member in your ECE program, and one letter from the director of a child care centre;
- (e) a letter of application, including a statement of professional goals and expectations of the program, and a curriculum vitae;
- (f) an overall average in their Carleton courses sufficient to meet the comparable standing requirements for continuation in the B.A. Programs (see sections 5.7 and 5.8, p. 80).

Upon admission into the program, students in both categories will be granted up to a maximum of 5.0 credits based on their ECE studies and related work experience, on the recommendation of the Program Coordinator. These credits are applicable only to the Child Studies program.

Students admitted under *Category A* may receive the following:

Child Studies 04.14x★, 04.24x★, Interdisciplinary Studies 03.14x★, 03.24x★, Psychology 49.25x★, 49.35x★, 49.391★, Social Work 52.221★, Sociology 53.1xx★, 53.2xx★

Students admitted under *Category B* may receive the following:

Child Studies 04.14x★, 04.24x★, 04.39x★, Interdisciplinary Studies 03.14x★, 03.24x★, Psychology 49.391★, Social Work 52.221★, Sociology 53.1xx★, 53.2xx★.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation requirements (see p. 49) and all Faculty requirements (see p. 82), in addition to all the Major requirements set out below.

### Honours Program

For the Honours degree, candidates for the Child Studies program must meet the normal requirements of 20.0 credits. These will in-



clude a core of 10.0 credits plus 5.0 program elective credits. Students who have obtained the ECE diploma with a *B+* average or better will be granted up to a maximum of 5.0 credits on admission.

### Course Requirements:

1. 2.5 credits in Interdisciplinary Studies:
  - 03.410★, 04.251★, 04.391★, 04.498
2. 2.5 credits in Psychology:
  - 49.100, 49.250★
  - Two of: 49.355★, 49.356★, 49.357★
3. 2.0 credits in Sociology or a related discipline:
  - One of: 56.220, 56.235, 54.230, 12.100, 24.130
  - 53.315
4. 1.0 credit in research methods:
  - One of: 49.200, 53.203
5. 1.0 credit in the Faculty of Science and/or the School of Computer Science.
6. 1.0 credit in the Faculty of Arts and Social Sciences and/or the Faculty of Public Administration and Management, not Psychology or Sociology.
7. 5.0 elective credits proposed by the student and approved by the Program Co-ordinator.

These must include a minimum of 1.0 credit at the 300- or 400-level. Some students may have to take courses extra to the degree to meet prerequisite requirements.

8. Any additional credits required to meet the total specified in the Statement of Standing on Admission, as proposed by the student and approved by the Program Co-ordinator.

A list of program electives that may be of interest can be obtained from the Program Co-ordinator.

In collaboration with the Program Co-ordinator, Honours students will develop a field of interest. Normally, a minimum of 2.0 elective credits should be in the field of interest. Three possible fields of interest are Developmental, Sociocultural and Managerial. A list of courses related to these fields can be obtained from the Program Co-ordinator.

Honours students who plan to apply for admission to Teacher's College or a graduate program should seek advice from the Program Co-ordinator in selecting their elective credits. Some substitutions to required courses may be acceptable, with permission of the Program Co-ordinator and the relevant department.

If a student admitted into either the B.A. or B.A. (Honours) program changes to another program after entry, transfer credits will be reassessed by the new program. This may result in a reduction of credits.

## B.A. Program

For the B.A. degree, candidates for the Child Studies program must meet the normal requirements of 15.0 credits. These will include a core of 8.5 credits plus 1.5 program elective credits. Students who have obtained the ECE diploma with a *B+* average or better will be granted up to a maximum of 5.0 credits on admission.

In collaboration with the Program Co-ordinator, students will design individual programs with a clear theme. This program should be complementary to their previous studies in early childhood education.

The requirements are the same as those for the B.A. (Honours) degree except:

1. 1.0 Credit in Interdisciplinary Studies:
  - 04.251★, 04.391★

7. 1.5 elective credits proposed by the student and approved by the Program Coordinator. Some students may have to take courses extra to the degree to meet prerequisite requirements.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

### Child Studies 04.251★ Issues in Child Studies

This course takes an interdisciplinary approach to Child Studies, introducing students to the perspectives and methods of study employed by various disciplines, including psychology and sociology. Issues related to research ethics will be introduced. Prerequisite: Psychology 49.100 and permission of the Institute. Lecture and discussion groups, three hours a week.

### Interdisciplinary 04.391★ Themes in Interdisciplinary Inquiry

The course will examine topics chosen by the interdisciplinary faculty, along with various methods of inquiry and styles of thought that may be brought to bear upon them. Student reading and research will compare, contrast and synthesize various perspectives.

Prerequisite: Third-year standing in Child Studies, or permission of the Institute.

Seminar three hours a week.

### Social Sciences 03.410★ Seminar on Special Research Problems in Social Sciences

This is a research-oriented honours seminar that focuses on special problems in the Social Sciences.

Prerequisite: Fourth-year Honours in a social sciences discipline or permission of the program co-ordinator.

### Interdisciplinary 04.498 Honours Project

Interdisciplinary research project for Honours students in the Fourth year of all IIS programs. In selecting a project, students must consult their Program Coordinator. Only the Program Coordinator can assign a supervisor or grant approval to register in this course. Arts and Social Sciences regulations governing Honours Research Essays and Honours Theses apply.

Registration in this course is limited to students in the Fourth year of a B.A. Honours program in IIS.

# Civil and Environmental Engineering

## (Engineering)

3432 Mackenzie Building  
Telephone: 520-5784  
Fax: 520-3951

### Academic Administration

**Chair, J.L. Humar**

### Teaching Staff

#### Professor Emeritus

**J. Adjeleian, B.Eng. (McGill), S.M. (Massachusetts Institute of Technology), P.Eng.**

#### Professors

**G.E. Bauer, B.A.Sc. (Toronto), M.A.Sc. (Waterloo), Ph.D. (Ottawa), F.E.I.C., P.Eng.** • **John P. Braaksma, B.A.Sc., M.A.Sc., Ph.D. (Waterloo), P.Eng.** • **A.O. Abd El Halim, B.Sc. (Alexandria), M.A.Sc. (Toronto), Ph.D. (Waterloo), P.Eng.** • **Gilbert A. Hartley, B.Eng., M.Eng. (Carleton), Ph.D. (Waterloo), P.Eng.** • **Jagmohan Lal Humar, B.Sc. (Banaras Hindu), M.Tech. (Indian Institute of Technology), Ph.D. (Carleton), F.C.S.C.E., F.E.I.C., P.Eng.** • **Deniz Karman, B.Sc. (Middle East Technical University, Turkey), M.Sc. (Ege University), Ph.D. (New Brunswick)** • **Ata M. Khan, B.Eng., M.Eng. (American University of Beirut), Ph.D. (Waterloo), P.Eng.** • **K.T. Law, B.Sc., M.Sc. (Hong Kong), Ph.D. (Western Ontario), P.Eng.** • **A.G. Razaqpur, B.Sc. (American University, Beirut), M.Sc. (Hawaii), Ph.D. (Calgary), P.Eng.** • **Juan Jose Salinas-Pacheco, Ingeniero Civil (Instituto Tecnológico y de Estudios Superiores de Monterrey), M.Sc. (Illinois), Ph.D. (Calgary), P.Eng.** • **Sampat Sridhar, B.Tech., M.Tech. (IIT, Madras), Ph.D. (New Brunswick), P.Eng.** • **G.T. Suter, B.Eng.Sc. (Western Ontario), M.A.Sc., Ph.D. (Toronto), P.Eng.**

#### Associate Professors

**Neal M. Holtz, B.Sc. (Alberta), M.Eng. (Technical University of Nova Scotia), Ph.D. (Carnegie-Mellon)** • **Stephen J. Kennedy, B.A.Sc. (Windsor), M.Sc., Ph.D. (Alberta)** • **David T. Lau, B.Eng. (McMaster), M.S., Ph.D. (California at Berkeley), P.Eng.**

#### Assistant Professors

**Wayne J. Parker, B.A.Sc., M.A.Sc., Ph.D. (Waterloo), P.Eng.** • **Paul Van Geel, B.A.Sc., Ph.D. (Waterloo)**

#### Adjunct Research Professors

**D. Bell, Transport Canada** • **M.S. Cheung, Public Works** • **S.E. Chidiac, National Research Council Canada** • **S.M. Easa, Lakehead University** • **G.Y. Fello, National Research Council Canada** • **W.F. Johnson, Transport Canada** • **E. H. H. Mohamed** • **B. Persaud, Ryerson Polytechnic University** • **A.P.S. Selvadurai, McGill University** • **L. Shallal** • **O.J. Svec, National Research Council Canada** • **M. Warith** • **E.W. Wright, E.W. Wright & Associates**

### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

As a result of the transition from the old program to the new program there may be some duplication of course descriptions and alterations in the course numbering.

#### Engineering 82.104 ★

##### Surveying

Surveying principles and practice. Measurements of distance, elevation differences, and angles. Errors and corrections. Theory, use and adjustments of surveying equipment. Note keeping. Procedures, triangulation, leveling, topographic and legal surveys. Road and building layout, horizontal and vertical curves, earthwork. Planning and application to Civil Engineering works. Lectures and field work three weeks at the beginning of the Spring term.

#### Engineering 82.105 ★

##### Introduction to Technology

Technical issues involved in architectural design of buildings from ancient times to the present. Technological innovation and materials related to structural developments, and the organization and design of structures. Basic concepts of equilibrium, and mechanics of materials.

Precludes additional credit for Architecture 72.213 ★.

Lectures three hours a week, laboratory three hours a week.

#### Engineering 82.211 ★

##### Mechanics II

Plane trusses. Virtual work. Friction. Relative motion of particles. Kinematics of a rigid body: translation, rotation; general plane motion; absolute and relative motion. Kinetics of a rigid body: equations of motion; work-energy; impulse-momentum; conservation of momentum and energy. Conservative forces and potential energy.

Precludes additional credit for Engineering 86.211 ★ and 91.211 ★. Prerequisites: Engineering 91.111 ★ and Mathematics 69.104 ★ and 69.114 ★.

Lectures three hours a week, problem analysis three hours a week.



**Engineering 82.220★****Mechanics of Deformable Bodies**

Stress and strain. Stress-strain relationship: Hooke's law. Torsion of circular shafts. Bending moment and shear force distribution. Flexural stresses. Deflection. Shear stress in beams. Stresses in thin-walled cylinders. Transformation of 2D stress and strain: Mohr's circle. Buckling of columns. Precludes additional credit for Engineering 86.222★. Prerequisite: Engineering 91.111★. Lectures three hours a week, problem analysis and laboratory three hours a week.

**Engineering 82.270★****Civil Engineering Materials**

Introduction to material science. Structure of atoms. Crystallography. Crystal Imperfections. Characteristics, behaviour and use of Civil Engineering materials: Steel, Concrete, Asphalt, Wood, Polymers, Composites. Specifications. Physical, chemical and mechanical properties. Quality control and material tests. Fatigue. Corrosion. Applications in construction and rehabilitation of structures. Prerequisites: Chemistry 65.111★, Mathematics 69.104★, and Physics 75.104★. Lectures three hours a week, problem analysis and laboratories three hours a week.

**Engineering 82.322★****Advanced Mechanics**

Shear flow. Definition of shear centre, Saint Venant and warping torsional constants. Behaviour, governing differential equations and solutions for torsion, beam-columns, lateral torsional buckling of doubly symmetric beams, axially loaded doubly symmetric, singly symmetric and asymmetric columns. Failure criterion, fatigue and fracture. Precludes additional credit for Engineering 82.444★ and 86.322★. Prerequisite: Engineering 82.220★. Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.323★****Introduction to Structural Analysis**

Concepts and assumptions for structural analysis: framed structures; joints; supports; compatibility and equilibrium; stability and determinacy; generalized forces and displacements. Principle of Virtual Work: unknown force calculations; influence lines. Complementary Virtual Work: displacement calculations; indeterminate analysis. Introduction to the Stiffness Method of Analysis. Prerequisite: Engineering 82.220★. Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.324★****Introduction to Structural Design**

Building systems and bridge types. Limit States Design. The design process. Material standards. National Building Code of Canada. The determination of dead, live, snow, rain, wind, earthquake and crane loads. Preliminary analyses. The determination of maximum load effects. Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

**Engineering 82.325★****Design of Structural Steel Components**

Introduction to CAN/CSA - S16.1, design and behaviour concepts; shear lag, block shear, local plate buckling, lateral torsional buckling, instantaneous centre, inelastic strength and stability. Design of tension members, axially loaded columns, beams, beam-columns, simple bolted and welded connections. (Also listed as Architecture 77.316★.) Prerequisites: Engineering 82.220★ and 82.324★. Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.326★****Design of Reinforced Concrete Components**

Introduction to CAN/CSA - A23.3; design and behaviour concepts; shear, bond, Whitney stress block, under and over reinforced behaviour, strain compatibility and ultimate strength, construction detailing. Flexural design of singly reinforced, doubly reinforced

and T-beams. Shear design for beams. Design of slabs, columns, and footings.

Prerequisites: Engineering 82.220★ and 82.324★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.328★****Geotechnical Mechanics**

Soil composition and soil classification. Soil properties, compaction, seepage and permeability. Concepts of pore water pressure, capillary pressure and hydraulic head. Principle of effective stress, stress-deformation and strength characteristics of soils, consolidation, stress distribution with soils, and settlement. Laboratory testing. (Also listed as Geography 45.417★ and Geology 67.417★.)

Prerequisites: Geology 67.244★ or equivalent and Third-year registration, or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 82.334★****Transportation Engineering and Planning**

Transportation and the socio-economic environment; modal and intermodal systems and components; vehicle motion, human factors, system and facility design; traffic flow; capacity analysis; planning methodology; environmental impacts; evaluation methods. (Also listed as Geography 45.434★.)

Prerequisite: Third-year registration, or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.420★****Matrix Analysis of Framed Structures**

Review of basic structural concepts. Betti's law and applications. Matrix flexibility method; flexibility influence coefficients. Development of stiffness influence coefficients. Stiffness method of analysis: beams; plane trusses and frames; space trusses and frames. Introduction to the finite element method. (Also listed as Architecture 77.314★.)

Prerequisite: Engineering 82.323★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.421★****Finite Element Methods in Structural Analysis**

Review of matrix stiffness analysis of frames. Introduction to theory of elasticity. Simple finite elements. Virtual Work formulation of equilibrium of structure and element. Lagrange interpolation and basis for displacement shape functions. Considerations in finite element modelling. Plate bending theory and analysis.

Also offered, at the graduate level with additional or different requirements, as Engineering 82.513 for which additional credit is precluded.

Prerequisite: Engineering 82.420★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.422★****Wood Engineering**

Structural design in timber. Properties, anatomy of wood, wood products, factors affecting strength and behaviour, strength evaluation and testing. Design of columns, beams and beam-columns. Design of trusses, frames, glulam structures, plywood components, formwork, foundations, connections and connectors. Inspection, maintenance and repair. (Also listed as Architecture 77.422★.)

Prerequisite: Fourth-year registration or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.428★****Geotechnical Engineering**

Strength of soils; shear strength, bearing capacity, consolidation. Stress distribution in soils. Earth pressures; at rest, active and passive. Design of flexible and rigid retaining structures. Stability of excavations, slopes and embankments. Settlement of foundations. Bearing capacity of footings.



Prerequisite: Engineering 82.328★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.429★**  
**Highway Engineering**

Highway planning; highway location and geometric design; traffic engineering; highway capacity; soil classifications; subgrade and base materials; highway drainage; frost action; structural design of rigid and flexible pavements; highway economics and finance; maintenance and rehabilitation.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.431★**  
**Foundation Engineering**

A critical study of the theories in soil mechanics and their application to the solution of geotechnical engineering problems. Field investigations, laboratory and field testing, special footings, mat foundations, caissons, pile foundations and excavations. Discussion of new methods and current research.

Prerequisite: Engineering 82.428★.

Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 82.432★**  
**Reinforced and Prestressed Concrete Design**

Reinforced concrete shear and torsion design by the General Method. Two-way slab design by Direct Design and Equivalent Frame Method. Behaviour and design of slender reinforced concrete columns. Prestressed concrete concepts; flexural analysis and design; shear design; anchorage zone design; deflection and prestress loss determination.

Prerequisite: Engineering 82.326★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.433★**  
**Urban Planning**

A systematic approach to urban planning; urban sprawl; data collection; forecasting; standards; space requirements; land use; zoning; transportation; land development; site selection; land capability; layout; evaluation; housing; urban renewal and new towns. (Also listed as Geography 45.433★.)

Prerequisite: Third-year registration, or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.437★**  
**Municipal Hydraulics**

Hydraulics of sewers flowing partially full, flow in sewer junctions and transitions; estimates of amounts of sanitary and storm sewage; design of sewage collection systems; pumps, control, and measuring devices. Open channel flow and hydraulics of treatment processes.

Prerequisite: Engineering 86.230★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.438★**  
**Behaviour and Design of Steel Structures**

Behaviour and design of open web steel joists, steel and composite decks, composite beams and columns, stud girders, and plate girders. Design of moment connections, base plates and anchor bolts, and bracing connections. Stability of rigid and braced frames. Design for lateral load effects.

Prerequisites: Engineering 82.325★ and Fourth-year registration. Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.440★**  
**Construction/Project Management**

Systems approach to project planning and control. Analysis of alternative network planning methods: CPM, precedence and PERT; planning procedure; computer techniques and estimating; physical, economic and financial feasibility; implementation feedback and control; case studies. (Also listed as Business 42.438★.)

Prerequisite: Fourth-year registration.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.443★**  
**Masonry Design**

Introduction to structural design in masonry. Properties of masonry materials and assemblages. Behaviour and design of beams, walls and columns. Selected topics including veneer wall systems, differential movement, workmanship, specifications, inspection, maintenance and repair. Lowrise and highrise building design. Also offered, at the graduate level with additional or different requirements, as Engineering 82.520, for which additional credit is precluded.

Prerequisite: Fourth-year registration or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.447★**  
**Municipal Engineering**

Introduction to fundamentals of municipal engineering. City management; permits and approvals; water supply, treatment and distribution; sewage collection, treatment and disposal; solid waste management; snow disposal; protective services.

Precludes additional credit for Engineering 82.337★.

Prerequisite: Fourth-year registration.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.450★**  
**Computer Methods in Civil Engineering**

Application of object oriented programming to solve Civil Engineering problems in surveying; transportation, hydrotechnical, geotechnical, environmental and structural engineering. Computing techniques include data structures, data storage and data base management, development of hypertext documents, and the development of graphical user interfaces.

Prerequisites: Engineering 94.266★ and Fourth-year registration.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 82.460★**  
**Advanced Building Systems**

Architecture as a multi-disciplinary endeavour with emphasis on the architect's role and responsibility. Relationship of design intentions to support, enclosure, services, interior finishes with emphasis on contemporary concerns and means in architecture. Basic concepts of structural analysis and design.

Precludes additional credit for Architecture 77.313★.

Prerequisites: Architecture 77.101★ and Engineering 82.105★.

Lectures three hours a week, laboratory one hour a week.

**Engineering 82.495★**  
**Professional Practice**

Presentations by faculty and external lecturers to familiarize future professional engineers with the Professional Engineers Act, professional ethics, and with current engineering practice within the discipline and its relationship with other disciplines and to society. Communication skills are emphasized.

Precludes additional credit for Engineering 86.495★, 94.395★ and 97.395★.

Prerequisite: Fourth-year registration.

Lectures three hours a week.

**Engineering 82.497**  
**Engineering Project**

A major project in engineering analysis, design, development or research carried out by individual students or small teams. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgement. A project proposal, an interim report, an oral presentation, and a comprehensive final report are required.



**Engineering 81.201 ★**

**Process Analysis for Environmental Engineering**

Material and energy balances for reacting and non-reacting systems. Applications in mining, metallurgy, pulp and paper, power generation, energy utilization. Emissions to the environment per unit product or service generated. Introduction to life cycle analysis, comparative products and processes.

Prerequisites: Chemistry 65.111 ★ or equivalent, and Engineering 86.240 ★, or approval of the Department.

Lectures two hours a week, problem analysis three hours a week.

**Engineering 81.202 ★**

**Microbiology**

The biology of the Bacteria, Archaea, Viruses and Protozoans, from the fundamentals of cell chemistry, molecular biology, structure and function, to their involvement in ecological and industrial processes and human disease. (Also listed as Biology 61.233 ★.) Precludes additional credit for Biology 61.331 ★

Prerequisite: Biology 61.103 ★ or Chemistry 65.111 ★.

Lectures three hours a week.

**Engineering 81.301 ★**

**Environmental Engineering Unit Operations**

Dimensional analysis and dimensionless numbers; Agitation and mixing of fluids; Flow past particles, drag coefficients, settling classification; Filtration and other mechanical separations; Heat transfer, individual and overall coefficients; Mass transfer, individual and overall coefficients; Absorption and leaching; Membrane separations. Laboratory procedures: Settling operations, filtration, aeration.

Prerequisite: Engineering 86.230 ★.

Lectures three hours a week, problem analysis one hour a week, laboratory three hours alternate weeks.

**Engineering 81.302 ★**

**Environmental Engineering Systems Modelling**

Engineered systems for pollution abatement; Chemical reaction engineering; reaction kinetics and rate data analysis; design and modelling of reactors; single and multiple reactions; ideal and nonideal reactors; single and multi-parameter models; biochemical reaction engineering; process control. Laboratory procedures: reactor systems performance: Batch, CSTR and PFR.

Prerequisites: Chemistry 65.111 ★, Mathematics 69.204 ★, Engineering 81.201 ★.

Lectures three hours a week, problem analysis one hour a week, laboratory three hours alternate weeks.

**Engineering 81.303 ★**

**Water Resources Engineering**

A quantitative analysis of natural water systems and the development of these systems, as a resource, by society. Distribution of water resources in Canada, descriptive and quantitative hydrology, groundwater, probability concepts in water resources, optimization of water resource utilization, water distribution and pipe networks. (Also listed as Geography 45.413 ★.)

Prerequisites: Engineering 82.328 ★ and 86.230 ★, or permission of the Department.

Lectures three hours a week, problem analysis one hour a week.

**Engineering 81.304 ★**

**Contaminant and Pollutant Transport in the Environment**

Physical phenomenon governing the transport of contaminants in the environment: diffusion, advection, dispersion, sorption, inter-phase transfer. Derivation and application of transport equations in air, surface and groundwater pollution; analytical and numerical solutions. Equilibrium partitioning of contaminants among air, water, sediment, and biota.

Prerequisites: Chemistry 65.280 ★, Engineering 81.302 ★.

Lectures three hours a week, problem analysis one hour a week.

**Engineering 81.401 ★**

**Hazardous Waste Management**

Definition and characterization of hazardous waste, applicable legislation; fundamental reactions influencing the fate of hazardous wastes; development of fate and transport equations for hazardous wastes in the environment; management practices associated with generation, handling and disposal of hazardous wastes. Processes for treatment and disposal of hazardous wastes. Remediation of contaminated sites.

Prerequisites: Engineering 81.302 ★, 81.304 ★, 82.428 ★ (may be taken concurrently).

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 81.402 ★**

**Environmental Geotechnical Engineering**

Landfill design; hydrogeologic principles, water budget, landfill liners, geosynthetics, landfill covers, quality control/quality assurance, clay leachate interaction, composite liner design and leak detection. Landfill operation, maintenance and monitoring. Case studies of landfill design and performance. Geotechnical design of environmental control and containment systems.

Prerequisites: Engineering 81.304 ★, 82.328 ★.

Lectures three hours a week, problem analysis one hour a week.

**Engineering 81.403 ★**

**Air Pollution and Emissions Control**

Sources and classification of air pollutants. Ambient air quality objectives and monitoring. Stoichiometric, thermodynamic, kinetic considerations in combustion. Particulates. Control and measurement of emissions from mobile and stationary sources. Indoor air quality. Laboratory procedures: emissions from boilers and IC engines, particulate size distribution and control.

Prerequisites: Chemistry 65.280 ★, Engineering 86.230 ★, 86.240 ★.

Lectures three hours a week, problem analysis one hour a week, laboratory three hours alternate weeks.

**Engineering 81.405 ★**

**Environmental Engineering Unit Processes**

Chemical treatment methods, biological waste water treatment, and sludge management. Removal of trace organics/hazardous substances. Nutrient removal. Laboratory procedures: Activated sludge, anaerobic growth, chemical precipitation, chlorination.

Prerequisites: Engineering 81.202 ★, 81.301 ★, 81.302 ★.

Lectures three hours a week, problem analysis one hour a week, laboratory three hours alternate weeks.

**Engineering 81.406 ★**

**Hydrogeology and Groundwater Flow**

Theory of flow through porous media; soil characterization, soil properties, anisotropy, heterogeneity. Contaminant transport. Un-saturated and multiphase flow. Flow in fractured media. Numerical modelling; finite differences, finite elements, boundary conditions. Site remediation and remediation technologies. Case studies and parameter sensitivity.

Prerequisites: Engineering 81.304 ★ and 82.328 ★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 81.411 ★**

**Waste Management**

A systematic analysis of issues dealing with solid and hazardous waste management. Waste definitions and description, collection and transportation, prevention and diversion, treatment technologies, landfilling, thermal processes.

Precludes additional credit for Engineering 81.401 ★ and 81.407 ★.

Prerequisites: Engineering 81.301 ★, 81.302 ★ and 81.304 ★.

Lectures three hours a week, problem analysis one hour a week.

**Engineering 81.414 ★**

**Environmental Planning and Impact Assessment**

Environmental planning and management of residuals. Environmental standards and marketable rights. Risk Assessment, policy development and decision-making. Fault-tree analysis. Canada and U.S. environmental regulations. Framework for Environmental Impact Assessment, survey of techniques for impact assessment and EIA review process. Case studies of selected engineering projects.

Precludes additional credit for Engineering 81.404 ★ and 81.408 ★.

Prerequisite: Fourth-year registration in the Environmental Engineering program.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 81.497****Engineering Project**

A major project in engineering analysis, design, development or research carried out by individual students or small teams. The

objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgement. A project proposal, an interim report, an oral presentation, and a comprehensive final report are required.



# Classics

## (Arts and Social Sciences)

1416 Dunton Tower  
Telephone: 520-5644

### General Information

Students currently enrolled in programs offered by the Discipline of Classics are governed by the requirements contained in the 1997-98 *Undergraduate Calendar*.

### Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

#### • Classical Civilization

First-Year Seminar in Classics 01.116  
**Issues in Classical Civilization**  
Please see course description on p. 84.

Classical Civilization 13.100

##### **Introduction to Classical Civilization**

An introduction to the study of Greek and Roman antiquity and to the discipline of Classics and its methodologies. The culture and society will be set in their historical context and studied through readings from representative ancient authors (in English translation) and through the art and architecture of the period.

Precludes additional credit for Classical Civilization 13.102★, 13.103★, 13.119.

Lectures two hours a week.

Classical Civilization 13.102★

##### **Introduction to Greek Civilization**

An introduction to the study of Greek antiquity and the discipline of Classics and its methodologies. The culture and society will be set in their historical context and studied through readings from representative ancient authors (in English translation) and through the art and architecture of the period.

Precludes additional credit for Classical Civilization 13.100, 13.119.

Lectures two hours a week.

Classical Civilization 13.103★

##### **Introduction to Roman Civilization**

An introduction to the study of Roman antiquity and the discipline of Classics and its methodologies. The culture and society will be set in their historical context and studied through readings from representative ancient authors (in English translation) and through the art and architecture of the period.

Precludes additional credit for Classical Civilization 13.100, 13.119.

Lectures two hours a week.

Classical Civilization 13.200

##### **Classical Mythology**

A study of classical mythology, emphasizing its use in Greek and Roman literature and its place in classical art and religion. There is some discussion of classical myths in terms of contemporary interpretations of myth. (All texts used will be in English).

Precludes additional credit for Classical Civilization 13.300.

Prerequisite: Second-year standing or registration in the B.Hum. program or permission of the School.

Lectures and discussion three hours a week.

Classical Civilization 13.206★

##### **Greek Philosophy: Plato and Aristotle**

A study, both historical and critical, of some central issues in the philosophy of Plato and of Aristotle. (This course is also listed as Philosophy 32.206★).

Precludes additional credit for Philosophy 32.205.

Prerequisite: At least 0.5 credit in Philosophy or Second-year standing.

Lectures three hours a week.

Classical Civilization 13.209

##### **Greek and Roman Literary Genres**

A study through English translation of the various genres of Greek and Latin literature, especially those which influenced later European writings: epic, drama, the ode, pastoral poetry, satire. (Also listed as English 18.209.)

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

Classical Civilization 13.230

##### **Methods and Techniques of Archaeology**

The interrelation of archaeology and anthropology, history, classics, art history, etc. Techniques of field archaeology such as stratigraphy, air photography, surveying, Carbon 14, typology and seriation, underwater archaeology, laboratory analysis: and the organization and administration of a major excavation.

Precludes additional credit for Classical Civilization 13.231.

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

Classical Civilization 13.235

##### **Ancient Science and Technology**

The development of science and technology in the ancient world and their practical application in such fields as ancient engineering, machinery, metallurgy, transport, building, agriculture and Hippocratic medicine: the position of the craftsman and artisan in society, the attitude of the intellectuals to science and manual labour, and the effect upon technological development of the institution of slavery. This course is suitable for students with no previous knowledge of Greece or Rome.

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

Classical Civilization 13.290

##### **History of Ancient Greece**

The history of classical Greece to the conquest of Asia by Alexander with special attention to the development of her characteristic institutions. (Also listed as History 24.290.)

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

Classical Civilization 13.291

##### **History of Ancient Rome**

The history of ancient Rome, her organization and expansion especially during the late Republic and early Empire. (Also listed as History 24.291.)

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

Classical Civilization 13.302

##### **The Later Roman Empire**

The study of major developments - administrative, ecclesiastical, cultural and societal - of the later Roman Empire. (Also listed as History 24.302.)

Prerequisite: A 200-level Classical Civilization course.

Lectures three hours a week.

**Classical Civilization 13.321 ★****Studies in Greek History and Institutions**

A study of one of the major periods of ancient Greek history. (Also listed as History 24.309★.)

Prerequisite: Classical Civilization 13.290 or permission of the School.

Lectures two hours a week.

**Classical Civilization 13.322 ★****Studies in Roman History and Institutions**

A study of one of the major periods or themes of the history of ancient Rome. (Also listed as History 24.311★.)

Prerequisite: Classical Civilization 13.291 or permission of the School.

Lectures two hours a week.

**Classical Civilization 13.330****Archaeological Field Work**

Students will participate for a minimum of five weeks in the excavation of an archaeological site. In addition they will study stratigraphic analysis and the recording and processing of finds. Written reports on specific aspects of the particular excavation are required.

Prerequisites: Classical Civilization 13.230 (old 13.231) and permission of the School, or permission of the School.

**Classical Civilization 13.334 ★****Etruscan and Roman Art**

This course studies Etruscan art and the development of Roman art and architecture through the Constantinian period. (Also listed as Art History 11.310★.)

Prerequisite: Second-year standing or permission of the School.

Lectures three hours a week.

**Classical Civilization 13.335 ★****Studies in Greek and Roman Art and Archaeology**

A study of a period or theme in the art and archaeology of Ancient Greece and Rome. Topics may vary from year to year. (Also listed as Art History 11.311★.)

Prerequisite: Second-year standing or permission of the School.

Lectures three hours a week.

**Classical Civilization 13.371 ★****Studies in Greek Literature**

A study of an author or topic in Greek literature.

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

**Classical Civilization 13.372 ★****Studies in Roman Literature**

A study of an author or topic in Roman literature.

Prerequisite: Second-year standing or permission of the School.

Lectures two hours a week.

**Classical Civilization 13.390 ★****Directed Studies**

Supervised readings and research projects chosen in consultation with the Supervisor of Undergraduate Studies.

Prerequisite: Third-year standing or permission of the School.

**Classical Civilization 13.391 ★****Directed Studies**

Supervised readings and research projects chosen in consultation with the Supervisor of Undergraduate Studies.

Prerequisite: Third-year standing or permission of the School.

**Classical Civilization 13.402****Beginnings of Early Medieval Europe and the Near East**

A seminar on the transformation of the later Roman world into the politics of early Medieval Europe and the Near East. (Also listed as History 24.402.)

Prerequisite: Permission of the School.

Seminar three hours a week.

**Classical Civilization 13.427****Selected Topics in Classical History and Literature**

A seminar on historical and literary aspects of a particular period of antiquity. Intended for Third- and Fourth-year students.

Prerequisites: Classical Civilization 13.209, one of 13.290, 13.291,

13.321★, 13.322★; and permission of the School.  
Seminar two hours a week.

**Classical Civilization 13.428****Selected Topics in Greek and Roman Literature**

Intended for Third- and Fourth-year students.

Prerequisites: Classical Civilization 13.209 and permission of the School.

Seminar two hours a week.

**Classical Civilization 13.429****Selected Topics in Greek and Roman History**

Intended for Honours students in History and Classics who should normally be in the Third- or Fourth-years. (Also listed as History 24.429.)

Prerequisites: Classical Civilization 13.290 or 13.291 or 13.321★ or 13.322★ and permission of the School.

Seminar two hours a week.

**Classical Civilization 13.430****Archaeological Field Work (Advanced)**

Students will participate for a minimum of five weeks in a position of responsibility in the excavation of an archaeological site. They will be responsible for excavating and for the recording, processing and analysis of finds. A specialized report on a particular aspect of the excavation is required.

Prerequisites: Classical Civilization 13.330 and permission of the School.

**Classical Civilization 13.490 ★****Directed Readings and Research**

These courses consist of supervised readings and research projects in a specific area of Classical Civilization to be chosen in consultation with the Honours Supervisor.

Prerequisites: Fourth-year Honours standing and permission of the School.

**Classical Civilization 13.491 ★****Directed Readings and Research**

These courses consist of supervised readings and research projects in a specific area of Classical Civilization to be chosen in consultation with the Honours Supervisor.

Prerequisites: Fourth-year Honours standing and permission of the School.

**Classical Civilization 13.492 ★****Directed Readings and Research**

These courses consist of supervised readings and research projects in a specific area of Classical Civilization to be chosen in consultation with the Honours Supervisor.

Prerequisites: Fourth-year Honours standing and permission of the School.

## • Greek

**Greek 15.105 ★****Introduction to Classical Greek I**

A course for beginners in ancient Greek, designed to give students a grasp of basic grammatical forms and vocabulary (with reference to English derivatives) through the reading of continuous Greek.

Lectures and practice periods four hours a week.

**Greek 15.106 ★****Introduction to Classical Greek II**

A course for students with some previous knowledge of the language: study of grammatical forms and constructions; acquisition of reading skills.

Prerequisite: Greek 15.105★ or equivalent.

Lectures and practice periods four hours a week.

**Greek 15.220 ★****Intermediate Classical Greek I**

Further study of the language; introduction to the reading of ancient Greek authors.

Prerequisite: Greek 15.106★ or equivalent.

Precludes additional credit for Greek 15.201.

Tutorials three hours a week.



Greek 15.221 ★

**Intermediate Classical Greek II**

Continued study of the language; reading of selected prose and poetry by ancient Greek authors; development of translation skills.

Prerequisite: Greek 15.220 ★ or equivalent.

Precludes additional credit for Greek 15.201.

Tutorials three hours a week.

Greek 15.390 ★

**Studies in Greek Poetry**

Reading and critical discussion of selections from ancient Greek poetry.

Prerequisite: Greek 15.221 ★ or equivalent.

Tutorials three hours a week.

Greek 15.391 ★

**Studies in Greek Prose**

Reading and critical discussion of selections from ancient Greek prose.

Prerequisite: Greek 15.221 ★ or equivalent.

Tutorials three hours a week.

Greek 15.490 ★

**Directed Study (Poetry)**

Greek 15.491 ★

**Directed Study (Prose)**

• **Latin**

Latin 16.105 ★

**Introduction to Latin I**

A course for beginners in Latin, designed to give students a grasp of basic grammatical forms and vocabulary (with reference to English derivatives) through the reading of continuous Latin.

Lectures and practice periods four hours a week.

Latin 16.106 ★

**Introduction to Latin II**

A course for students with some previous knowledge of the language: study of grammatical forms and constructions; acquisition of reading skills.

Prerequisite: Latin 16.105 ★ or equivalent.

Lectures and practice periods four hours a week.

Latin 16.115

**Beginning Latin**

Latin 16.220 ★

**Intermediate Latin I**

Further study of the language; introduction to the reading of Latin authors.

Prerequisite: Latin 16.106 ★ or equivalent.

Precludes additional credit for Latin 16.201.

Tutorials three hours a week.

Latin 16.221 ★

**Intermediate Latin II**

Continued study of the language; reading of selected prose and poetry by Latin authors; development of translation skills.

Precludes additional credit for Latin 16.201.

Prerequisite: Latin 16.220 ★ or equivalent.

Tutorials three hours a week.

Latin 16.250 ★

**Translation I**

A course designed to improve the students' proficiency in sight translation from Latin and to give practice in translation from English into Latin (prose composition).

Prerequisite: Latin 16.201 or permission of the School.

Tutorials three hours a week.

Latin 16.390 ★

**Studies in Latin Poetry**

Reading and critical discussion of selections from Latin poetry.

Prerequisite: Latin 16.221 ★ or equivalent.

Tutorials three hours a week.

Latin 16.391 ★

**Studies in Latin Prose**

Reading and critical discussion of selections from Latin prose.

Prerequisite: Latin 16.221 ★ or equivalent.

Tutorials three hours a week.

Latin 16.490 ★

**Directed Study (Poetry)**

Latin 16.491 ★

**Directed Study (Prose)**

# Cognitive Science

## (Arts and Social Sciences)

2216 Dunton Tower  
Telephone: 520-2368 or 520-2807

### Academic Administration

**Program Co-ordinator,** Ann Laubstein

**Members of the Committee**

Ann Laubstein • Helmut Zobl • William Petrusic

• Chris Herdman • John Logan • Franz Oppacher • Jean-Pierre Corriveau • Andrew Brook, Chair

### General Information

Cognitive Science is a multi-disciplinary approach to the study of human cognition, perception, emotion and so on. First mooted as a branch of knowledge with the development of computers in the years following WWII, it took on an identity as a separate discipline in the mid-1970's. Now found at over 150 universities worldwide, Philosophy, Linguistics, Psychology and Computer Science have always been major contributors to its work. At Carleton, all four disciplines contribute directly to the undergraduate program. Other academic units such as Sociology/Anthropology and Biology offer highly relevant courses. Going all the way from the abstract study of concepts of cognition at one end to well-defined empirical research into language and cognition and the specifics of modelling cognition on computers on the other, Cognitive Science presents a unique opportunity to study four major approaches to human cognition, perception, etc. at the same time. In addition to a satisfactory overview of the four approaches together, the Carleton program also offers students an opportunity to acquire deeper knowledge of one of them. This feature of Carleton's program greatly expands the range of options open to graduates of the program.

The program is administered by the Institute of Interdisciplinary Studies (see p. 297 for the Institute's general listing).

### Admission Requirements

The admission requirements for Cognitive Science may be higher than those for Honours programs as a whole. It is likely that the number of places will be limited, so early application is recommended.

### Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations, including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements set out below.

### Honours Program

Carleton offers only an Honours program in Cognitive Science. This program consists of three elements: a core of courses taken by all students (9.5 credits); an area of specialization, selected from the five areas of specialization listed immediately below (5.0 or 5.5 credits); and free options to a total of 20.0 credits. The five areas of specialization are: Philosophical and Conceptual Issues; Language and Linguistics; the Biological Foundations of Cognition; Cognition and Psychology; and Cognition and Computation.

**Note:** Students are not required to complete courses in the order listed. The division into years is merely a guideline. However, students should take prerequisite courses early enough in their program to ensure that they can take upper-year courses when they wish to do so.

### Core Courses

#### *First Year*

- 29.100, 49.100, 95.105★, 32.151★ (recommended but not required)

#### *Second Year*

- 07.201★, 95.106★, 95.185★, 29.201★, 29.203★, 49.220★ or 49.270★, 32.252★
- 1.5 credits from an area of specialization

#### *Third Year*

- 07.301★, 32.201★ or 32.336★, 95.202★, 95.307★, 29.356★, 49.220★ or 49.270★
- 1.5 credits from the chosen area of specialization

#### *Fourth Year*

- 95.407★
- Honours essay, 1.0 Fourth-year credit and additional required credits, if any, from the chosen area of specialization.

### Areas of Specialization

#### *Philosophical and Conceptual Issues*

- 32.280 (also listed as 29.280), 32.332★, 32.351★, 32.380, 32.451★
- One of: 32.401★, 32.402★, 32.411★, 32.421★, 32.431★
- 04.498

#### *Language and Linguistics*

- 29.302★, 29.304★
- Four of: 29.241★, 29.263★, 29.264★, 29.271★, 29.361★, 29.311★, 29.393★
- Two of: 29.401★, 29.402★, 29.409★, 29.462★
- 04.498

#### *The Biological Foundations of Cognition*

- 49.200, 49.300, 49.320
- One of: 49.322★ or 49.372★, (49.322★ recommended)
- 1.0 credit at the Fourth-year level or above, to be chosen in consultation with the Co-ordinator
- 04.498



*Cognition and Psychology*

- 49.200, 49.300, 49.370
- One of: 49.322 or 49.372 ★, 49.372 ★ recommended
- 1.0 credit at the Fourth-year level or above, to be chosen in consultation with the Co-ordinator
- 04.498

*Cognition and Computation*

- 95.102 ★, 95.302 ★, 95.402 ★
- 1.5 additional Second-year credits or above in Computer Science, chosen in consultation with the Co-ordinator
- 1.0 Fourth-year credit or above in Computer Science, chosen in consultation with the Co-ordinator
- 04.498

## Prerequisites

Students should check the prerequisites for courses carefully, especially in their area of specialization, to ensure that by the year in which they wish to enrol in a given course, they have all prerequisites of that course.

The Honours Essay must be done in a student's area of specialization. To enrol in 04.498, a student must have satisfied all the requirements of that area of specialization except those of fourth-year.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

**Cognitive Science 07.201 ★**

**History of Cognitive Science**

A survey of the history and development of cognitive science as a separate branch of knowledge, from its roots in cybernetics and theory of computation in the late 1940's to the large multi-disciplinary, multi-national teaching and research program it has now become.

Prerequisite: Second-year standing or permission of the Institute. Three hours a week.

**Cognitive Science 07.301 ★**

**Elements of Cognitive Science**

Selected topics in cognitive science covered from the perspectives of psychology, computer science, linguistics, philosophy and other related disciplines.

Precludes additional credit for Cognitive Science 07.101 ★.

Lectures three hours a week.

**Interdisciplinary 04.498**

**Honours Project**

Interdisciplinary research project for Honours students in the Fourth year of all IIS programs. In selecting a project, students must consult their Program Coordinator. Only the Program Coordinator can assign a supervisor or grant approval to register in this course. Arts and Social Sciences regulations governing Honours Research Essays and Honours Theses apply.

Registration in this course is limited to students in the Fourth year of a B.A. Honours program in IIS.

# School of Languages, Literatures and Comparative Literary Studies

## Comparative Literary Studies

### (Arts and Social Sciences)

1416 Dunton Tower  
Telephone: 520-5644

#### General Information

Students currently enrolled in programs offered by the Discipline of Comparative Literary Studies are governed by the requirements contained in the 1997-98 *Undergraduate Calendar*.

#### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

##### Comparative Literary Studies 17.100

##### **Introduction to the Comparative Study of Literature**

A course designed to introduce the student to the comparative study of literary texts and the theoretical bases for such study. The course will develop critical and theoretical skills useful for reading a variety of original and translated texts drawn from different cultures, genres and historical periods.

Lectures two hours a week, tutorials one hour a week.

##### Comparative Literary Studies 17.200

##### **International Literary Movements**

Comparative study of primary and secondary sources which define international literary movements such as Renaissance, Romanticism, Realism, Modernism, and Post-modernism. Topics may vary from year to year. Topic for 1998-1999: Postmodernism: Comparative Perspectives.

Prerequisite: Second-year standing or permission of the School.  
Lectures/seminar two hours a week, tutorials one hour a week.

##### Comparative Literary Studies 17.207★

##### **The Literatures of Asia: Comparative Perspectives**

Issues arising from the literatures of the Asian continent. Topics may vary from year to year. Texts will be read in English, which is also the language of instruction. Topic for 1998-1999: Modernity and Tradition in Indian and Chinese Literature of the Nineteenth and Twentieth Centuries.

Prerequisite: Second-year standing or permission of the School.  
Lectures and seminars three hours a week

##### Comparative Literary Studies 17.208★

##### **The Literatures of Africa and the Middle East:**

##### **Comparative Perspectives**

Issues arising from the literatures of the African continent and the Middle East. Topics may vary from year to year. All texts will be read in English, which is also the language of instruction. Topic for 1998-1999: Nation and Identity in the Literatures of the Middle East and North Africa.

Prerequisite: Second-year standing or permission of the School.  
Lectures and seminars three hours a week

##### Comparative Literary Studies 17.300

##### **Themes, Genres, Periods**

The comparative study of a specific theme or genre through texts drawn from several historic periods. Topics may vary from year to year. Topic for 1998-1999: Love and Death: The Tristan Legend Throughout the Centuries.

Prerequisite: Second-year standing or permission of the School.  
Seminar two hours a week, tutorials one hour a week.

##### Comparative Literary Studies 17.302

##### **Gender and Literature**

Study of autobiographical writing, novels, short stories, and poetry by women writing in the 1970s, 1980s, and 1990s in a variety of cultural settings. Cross-cultural point of view informed by poststructuralist feminist criticism. All texts available in English translation.

Prerequisite: Second-year standing or permission of the School.  
Seminar three hours a week.

##### Comparative Literary Studies 17.361

##### **Studies in Literary Genres**

Development of modern and post-modern theatre in the works of Genet, Brecht, Pirandello, Beckett, Ionesco, Pinter. Continuities and discontinuities are discussed along with other problems of modernism and post-modernism.

Prerequisite: A university course in literature or permission of the School.  
Seminar three hours a week.

##### Comparative Literary Studies 17.401★

##### **Foundations of Comparative Literature**

The history of the discipline of comparative literature is studied, including its beginning in nineteenth-century France, its evolution, and its current status in Europe, the United States and Canada.

Prerequisite: Permission of the School.  
Seminar three hours a week.

##### Comparative Literary Studies 17.402★

##### **Theories of Literature**

Twentieth-century literary theories in the context of comparative studies. Over-all view of the theoretical discussion of literature from 1920 to the present: Russian Formalism; American New Criticism; structuralist, semiotic, socio-cultural and hermeneutic approaches.

Prerequisite: Permission of the School.

**Note:** Students enrolling in this course under the cross-listed number Spanish 38.402★ should note the requirements of Spanish.

Seminar three hours a week.



# Computer Science

5302 Herzberg Building  
Telephone: 520-4333

## Academic Administration

Director, E. Kranakis

Associate Director and Undergraduate Adviser, F. Fiala

Supervisor of Graduate Studies, Associate Director,  
Ottawa-Carleton Institute for Computer Science, D. Krizanc

Co-op Faculty Advisers, L.D. Nel and I. Reichstein

Registrar, B.R. Lifeso

## Teaching Staff

### Professors

Frank Dehne, B.Sc., M.Sc. (Technical University of Aachen), Ph.D. (Wurzburg) • Frantisek Fiala, RNDr., C.Sc. (Brno) • Evangelos Kranakis, B.Sc. (Athens), Ph.D. (Minnesota) • W.R. LaLonde, B.A.Sc., M.A.Sc. (Toronto), Ph.D. (Waterloo) • John B. Oommen, B.Tech. (Indian Institute of Technology), M.Eng. (Indian Institute of Science), M.Sc., Ph.D. (Purdue) • Franz Oppacher, M.C.S. (Concordia), Ph.D. (Vienna) • Jorg-Rudiger Sack, Vordiplom, Diplom (Bonn), Ph.D. (McGill) • Nicola Santoro, D.Sc. (Pisa), Ph.D. (Waterloo)

### Associate Professors

Jean-Pierre Corriveau, B.Sc., M.C.S. (Ottawa), Ph.D. (Toronto) • S. Dandamudi, B.E. (Mysore), M.Tech. (Indian Institute of Technology), M.Sc., Ph.D. (Saskatchewan) • Danny Krizanc, B.Sc. (Toronto), Ph.D. (Harvard) • Louis D. Nel, B.Eng. (Carleton), M.Math, Ph.D. (Waterloo) • Ekow J. Otoo, B.Sc. (Kumasi, Ghana), M.Sc. (Newcastle-upon-Tyne), Ph.D. (McGill) • Irwin Reichstein, B.Sc. (McGill), Ph.D. (Minnesota)

### Assistant Professors

Prosenjit Bose, B. Math, M. Math (Waterloo), Ph.D. (McGill) • Dwight Deugo, B.C.S., M.C.S., Ph.D. (Carleton) • A. Maheshwari, B.E.E.Eng., M.Sc. (Birla), Ph.D. (Bombay)

### Lecturer

Francis Bordeleau, B.Sc. (Montréal), B.Sc.A (Quebec), M.C.S. (Carleton)

### Instructor

Mark Lanthier, B.C.S., M.C.S. (Carleton)

### Adjunct Research Professors

M.D. Atkinson • H. Djidjev • A. Nayak • J.E. Neilson • A. Pelc • J.R. Pugh • G. Roth • D.A. Thomas • P. Van Oorschot

## General Information

The School of Computer Science offers a variety of programs and courses which together provide a wide spectrum of educational opportunities for students wishing to specialize in Computer Science. The Honours Bachelor of Computer Science (B.C.S.) program is professionally recognized and accredited by CIPS, the Canadian Information Processing Society. A co-operative education option is also available within this program allowing students to complement their academic studies with practical experience in the work-place. In addition, the School offers combined Bachelor of Science (B.Sc.) Honours programs with the School of Mathematics and Statistics and the Department of Physics. The School offers a number of introductory courses that may stand alone in a program of another field of study or be augmented by a selection of other Computer Science courses to form an area of specialization.

Programs offered at the Graduate level include the Ph.D. and Master of Computer Science (M.C.S.) program offered in conjunction

with the Ottawa-Carleton Institute for Computer Science, and the more interdisciplinary Master of Information System Science (M.Sc.) program. For details of these programs please refer to the Calendar of Graduate Studies and Research.

The School of Computer Science has a wide variety of computing equipment for student use. There are 15 laboratories: nine primarily for undergraduate courses, one dedicated to graduate students and five that are used solely for research. The School emphasizes the use of microcomputers to allow each student access to a powerful individual workstation, enabling the provision of a wide spectrum of computational equipment from networked microcomputer systems for student use to networked SUN workstations for graduate research. In addition, all students have access to the campus-wide computing facilities.

## Bachelor of Computer Science (Honours), B.C.S. (Hons.) Program

The B.C.S. program is an Honours degree program in which candidates are required to complete 20.0 credits or equivalent after admission to First year. Students in the co-operative education stream are minimally required to complete an additional four work-term half course credits.

In order to provide the student with a choice of specialization, the program is designed around a core curriculum combined with a choice of two program streams. These options are designed to prepare graduates for professional careers in computer-related occupations or for advanced study at the graduate level.

## Admission Requirements

### First Year

The OSSD or equivalent, including six OACs, two of which must be (i) Calculus and (ii) Algebra and Geometry. An overall average of 65 percent or better is required along with an average of 65 percent or better in both Calculus and Algebra and Geometry; or the successful completion of Qualifying-University year with a GPA of 5.0 or better and including Mathematics 69.007★ and 69.017★ also with a GPA of 5.0 or better.

### First Year with Co-operative Option

The OSSD or equivalent, including six OACs, two of which must be (i) Calculus and (ii) Algebra and Geometry. An overall average of 85 percent or better is required along with an average of 85 percent or better in both Calculus and Algebra and Geometry; or the successful completion of Qualifying-University year with a GPA of 11.0 or better and including Mathematics 69.007★ and 69.017★ also with a GPA of 11.0 or better. Students who do not meet these requirements on entry to the B.C.S. program may apply for admission to the Co-operative Option when they meet the requirements specified in the B.C.S. program (see p. 42) for the School of Computer Science.

### Advanced Standing

Applications for admission beyond First year will be assessed on their individual merits. Advanced standing will be granted only for those subjects assessed as being appropriate for the program and for the option selected.

### Mature Applicants

Persons who lack the normal entrance requirements as published in this Calendar may receive consideration for admission under the mature applicant policy. Applicants will normally have been away from full-time studies for a minimum of two years and must be 21 years of age, or over, by December 31 of the year in which they wish to enrol. For full details see p. 37.

### Enrolment Limitation

Applicants should note that meeting the admission requirements can only establish eligibility for selection to the School of Computer Science.

## Course Requirements

The program for the degree of Bachelor of Computer Science (Honours) consists of a total of 20.0 credits, normally 5.0 taken each year, including at least 7.5 Computer Science credits, 3.0 from Mathematics and Statistics, 2.5 from the Faculties of Arts and Social Sciences, an additional 2.0 from either the Faculty of Science (excluding Mathematics) or the School of Business, and to include at least 2.0 credits chosen from 400-level courses.

Because the study of Computer Science is necessarily structured, students are required to select a course of study from one of two streams in addition to those courses of the core program. The streams are:

1. Software and Computing
2. Management and Business Systems

### Relevant Courses

All courses bearing a 95 prefix carry the designation Computer Science. In addition, the following courses offered by the School of Business and the Faculty of Engineering are relevant to the B.C.S. program, are counted as Computer Science credits and are treated as Computer Science courses in the calculation of GPAs. (See also p. 210.)

*Business* 42.230★, 42.240★, 42.440★, 42.442★, 42.446★, 42.447★.

*Engineering* 94.333★, 94.405★, 94.457★.

## Core Courses

All students enrolled in the Computer Science degree program are required to complete the following core courses:

### First Year

Mathematics 69.107★ and 69.114★;  
Computer Science 95.105★, 95.185★, 95.106★ and 95.102★.

### Second Year

Mathematics 69.217★;  
Computer Science 95.202★, 95.203★, 95.204★ and 95.285★.

### Third Year

Mathematics 69.311★;  
Computer Science 95.300★, 95.304★, 95.305★, 95.307★ and 95.384★.

### Fourth Year

Computer Science 95.495★.

## Program Streams

### Software and Computing Stream

This stream is intended for students interested in the theory and practice of software, ranging from the design and implementation of large systems to the theory of computing. Example topics include: the design and analysis of algorithms, distributed and parallel computing, programming languages, operating systems, databases. The program requirements of this stream are:

#### First Year

1.0 credit in an experimental science.

#### Second Year

Mathematics 69.207★ and 69.265★;  
0.5 additional Computer Science credit at the 200-level or above.

#### Third and Fourth Years

Computer Science 95.484★  
and  
1.0 additional Computer Science credit at the 300-level or above;  
and  
1.5 additional Computer Science credit at the 400-level.

### Management and Business Systems Stream

This stream is intended for students whose interests include the application of computers to business. It is designed to prepare students for the careers in this field, with a combination of Computer Science courses and a strong component of courses selected from those offered by the School of Business. Program requirements for the Management and Business Systems stream are:

#### First Year

Business 42.101★ and 42.102★;  
Economics 43.100.



**Second Year**

Business 42.211★, 42.230★, 42.254★;  
Mathematics 69.257★.

**Third Year**

Business 42.343★ and  
0.5 additional Computer Science credit at the 200-level or above;

**Fourth Year**

1.0 additional credits in Business at the 300-level or above;  
0.5 additional credit in Business at the 400-level;  
One of Mathematics 69.259★ or 0.5 credit in Mathematics at the 200-level or above;  
1.5 additional Computer Science credit at the 400-level.

**Counselling**

Every student in the Bachelor of Computer Science degree program is encouraged to contact the School of Computer Science Undergraduate Adviser with any question related to the program.

**Experimental Science Credits**

The following courses are acceptable as Science courses for Computer Science students but not as experimental science courses: Biology 61.190, 61.192★, 61.216★, 61.262★, 61.393★, Chemistry 65.103★, 65.107, Geology 67.104★, 67.383★, Physics 75.190, 75.195, Science 60.100, 60.200.

**Minor in Computer Science**

Students registered for the B.Sc. (Honours) degree may take a minor in Computer Science. The minor consists of 4.0 credits, to be successfully completed with a GPA of 6.5 or better: 95.105★, 95.106★, 95.102★, 95.185★, 95.202★, 95.204★, one of 95.304★ or 95.305★, and 69/95.386★.

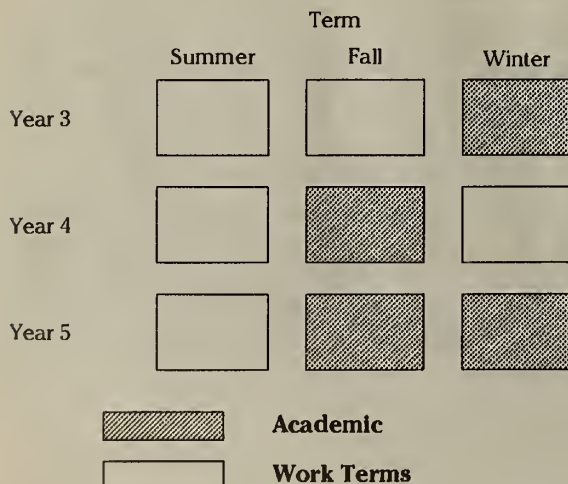
**The Co-operative Education Option**

General information on Co-op programs can be found on p. 39.

**The Work/Study Sequence**

Students admitted to the Co-operative option normally enter the work-place for their first work term on completion of year two in the B.C.S. program. The normal mode of operation requires two eight-month (or double) work terms and one four-month (or single) work term as shown on this page.

Students in the Co-operative option will require 56 months to complete their program as opposed to 44 months in the regular Honours program. Variations in the work study sequence may be requested due to academic or work situations in upper years. Precise start and finish dates for work terms are established in consultation with Co-operative employers.

**Co-operative Option Admission Requirements and Registration Information**

Admission into the Co-operative Option can occur:

1. directly upon being accepted to the First year of the B.C.S. program, for a student meeting requirements for the First year with Co-operative Option given on page 42.
2. from within the B.C.S. program, normally in the Second year, for a student who:
  - a) has a cumulative GPA of 8.0 or better in Computer Science and 6.5 or better overall;
  - b) has successfully completed 3.0 required credits in Computer Science, including one of 95.202★ or 95.204★;
  - c) is registered as a full-time student;
  - d) is eligible to work in Canada.

Note that meeting the above requirements only establishes eligibility for admission to the program. Enrolment in the Co-operative Option is limited.

Application forms for admission to the Co-operative Option are available from the Co-op Office for Engineering and Science. Completed applications should be submitted to that office by January 8, May 8 and September 8 for the respective work terms. Admission decisions are based on GPA and other requirements being met by the end of the previous term.

**Eligibility for Placement in the First Work Term of the Co-operative Option**

To be eligible for placement in the first work term of the Co-operative Option a student must meet the four above requirements a) through d) by the end of the term preceding the first job placement process.

**The Preliminary Work Term**

Students who have been accepted into the Co-operative Option in First year may be given the opportunity to take part in a preliminary work term at the end of their First year. To be eligible for placement in the preliminary work term, students must at the end of their first term of study:

- a) have a cumulative GPA of 11.0 or better in Computer Science and 11.0 or better overall;
- b) have successfully completed 1.0 credit in Computer Science;
- c) be registered as a full-time student;
- d) be eligible to work in Canada.

**Registration**

During a work term, co-operative students will register in one of five co-operative work term report courses; Computer Science 95.320★, 95.321★, 95.322★, 95.420★, or 95.421★. While on a work term, students are limited to an additional 0.5 credit course, unless they have written support from their employer to take 1.0 credit.

**Seeking Employment and Employer Interviews****Initial Job Application**

The maximum number of initial job applications allowed may vary from time to time, depending on the number of job opportunities and the number of students seeking employment. The maximum number will be conveyed to students in the Co-operative option by the Co-op Administrator.

**Re-posting and Late Posting**

Students may apply for a specified maximum number of additional interviews with employers who submit their job description late, as well as with employers who receive limited response to their initial advertisement.



## Missing Interviews

Students are expected to attend all individual interviews granted to them. Students who anticipate missing an interview for just cause should inform the Co-op Office immediately so that other arrangements can be made.

## Ranking Employers

Students rank all employers for whom they are prepared to work and by whom they have been interviewed. Ranking an employer amounts to an agreement to work for that employer if placed there through the placement process. Refusal to accept a job that has been ranked by the student will normally result in the student's being required to withdraw from the Co-operative option.

## Deleting Job Choices

The deletion of a job choice will be considered when the student consults with the Co-op Administrator.

## Acceptance of Employment

When students are placed they will normally receive from the employer a letter or a contract notifying them of the placement. Each student is expected to write a letter of acceptance to the employer or to sign the contract with the employer as appropriate.

## Inability to Find Suitable Employment

In the case that a student is unable to obtain suitable employment through the normal placement process or has been given permission to seek his/her own job but fails to do so, the student is expected to register as a full-time student in the Bachelor of Computer Science program. The only exception to this rule occurs in the Summer term.

## Failure to Report to Employer

Failure to report to an employer without prior approval from the Co-op Administrator will normally result in the student's being required to withdraw from the Co-operative option.

## Leaving Employer Without Prior Approval

Terminating employment without prior approval from the Co-op Administrator will normally result in the student's being required to withdraw from the Co-operative option.

## Strikes

It is each individual student's responsibility to decide whether or not to cross a picket line in the case of a strike. The role of the Co-op Administrator in this situation is to inform the student of the potential results of either decision.

## Dismissal With Cause

Dismissal of a student by an employer will be investigated by the Co-op Administrator and will normally result in the student's being required to withdraw from the Co-operative option.

## Commitment

Normally during double work terms the student is expected to work for the same employer. Provision is, however, allowed for such situations as one-term jobs and economic uncertainty.

## Change of Work Term — Academic Term Sequence

Upon entry to the Co-operative program, a student is expected to follow the prescribed work term/academic term sequence. However, applications to change the sequence will be considered by the School.

## Work-Term Reports

The Co-op Office provides a common set of written guidelines for all work-term reports. Work-term reports are evaluated and graded by a faculty member.

## Combined Honours B.Sc. Programs

A Combined Honours program must include a minimum of 6.0 credits in Computer Science. These requirements can be satisfied as follows:

### Computer Science and Mathematics

Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 335. The program features equal emphasis on Mathematics and Computer Science.

### Computer Science and Chemistry

Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 183. The program features equal emphasis on Chemistry and Computer Science.

## Introductory Courses

Of the eight 100-level courses offered in Computer Science, four are entry-level courses, viz., Computer Science 95.101★, 95.104★, 95.105★, and 95.107★. Computer Science 95.102★, 95.106★ and 95.108★ are second-level courses and should not be attempted unless one of the entry-level courses has been successfully completed. Computer Science 95.185★ requires one of the entry-level Computer Science courses (which may be taken concurrently).

With respect to the entry-level courses, students are expected to take only one. Specifically, students in the B.C.S. program or in a combined computer science program should note that credit will not be given for Computer Science 95.101★ or 95.104★, nor can credit be given for more than one of Computer Science 95.105★ or 95.107★. In selecting an entry-level course, students should take into account the following:

1. Computer Science 95.101★ is designed specifically for Arts and Social Sciences students and may not be taken for credit by students in Computer Science, Science or Engineering.
2. Computer Science 95.104★ is designed specifically for Science students and may not be taken for credit by students in Computer Science or Engineering.
3. Computer Science 95.105★ and 95.107★ are special entry-level courses designed specifically for students in (1) Computer Science and (2) Science respectively. These are not stand-alone courses and should, therefore, not be chosen by students who have not committed to further studies in these disciplines.

**Note:** Business 42.142★, 42.242★, and Social Sciences 03.300★ may not be taken for credit by students in Computer Science.

## Academic Standing

### Grading System

Standing in courses will be shown by alphabetical grades. (See p. 48.)

Standings to represent special circumstances are as follows:

#### Aeg

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the School of Computer Science Committee on Admission and Studies in response to a student's written request. It will be granted only in exceptional circumstances and if the term work has been of high quality.

#### Ch

Credit granted under the Challenge for Credit policy.



**F**

Failure. No academic credit.

**Wdn**

Withdrawn in good standing. No academic credit.

**Abs**

Failure due to absence from the final examination where the necessary term work has been completed. No academic credit.

**Def**

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the School of Computer Science Committee on Admission and Studies for deferred examination privileges.

**IP**

In progress.

**Sat**

Satisfactory.

**Uns**

Unsatisfactory.

**Computation of Averages**

Using the 12-point system, the grade points earned in any specific course are determined by multiplying the grade points corresponding to a grade by the credit value of the course. GPAs are calculated by dividing the total accumulated grade points by the total credits. Overall averages are calculated on the grades earned in all courses applicable to the degree. Computer Science GPAs involve only those courses listed or cross-listed as Computer Science and those courses offered by the School of Business and the Faculty of Engineering that are counted as Computer Science credits. A list of these courses can be found in the section entitled *Other Relevant Courses*, p. 210. Work Term Report Courses are not included in the computation of averages.

Unless otherwise indicated, courses are one full credit, indicated 1.0 on all record documents. Courses marked ★ are half-credits, indicated 0.5 on documents.

**Course Load**

The normal course load for a full-time student in the School of Computer Science, during the Fall/Winter session, is the equivalent of 5.0 credits. The normal maximum course load for a part-time student, in the Fall/Winter session, is the equivalent of 2.0 credits.

Students may register for a maximum of 2.0 credits in the Summer session.

A student in good standing may exceed the normal course load only with the recommendation of the Director of the School of Computer Science.

**Promotion from First Year**

Full-time students in First year, in order not to fail their year in May, must, by then, have passed at least 3.0 credits or equivalent. To be promoted to the course credit system, a full-time student must pass, by the end of August, at least 4.0 credits from the First year of his or her chosen option, including at least one credit in Computer Science, with a GPA of 6.5 or better in Computer Science courses and at 5.0 or better overall. (GPAs are to include any failing grades.) Part-time students must meet the same grade-point standards and pass at least 4.0 of the first 6.0 approved credits attempted.

For all students, promotion to the course-credit system must be accomplished in not more than three calendar years from the date of first registration in the B.C.S. program.

A student who fails to meet these promotion requirements is deemed to have failed First year and must forfeit credit for courses with grades of less than C- and is required to withdraw from the

B.C.S. program. Such students are eligible to re-apply for admission and, if admitted, will repeat First year without encumbrances, retaining credit towards their degree (but not towards completion of First year) for all courses graded C- or better. A student who fails First year a second time forfeits his or her undergraduate status in the B.C.S. program and is ineligible for any further registration in the B.C.S. program.

**Course Credit System**

Students meeting promotion requirements at the end of First year will proceed on the course credit system. Under this system there is no promotion from one year to the next.

After promotion to the course credit system, a student may accumulate a maximum of 3.0 credits in repeated courses or course replacements.

To continue in the B.C.S. program, a student must, by the end of August each year, have gained credit in the past 12 months towards the B.C.S. degree and have a cumulative GPA of 6.5 or better in Computer Science courses and 5.0 or better overall. (GPAs are to include any failing grades.) Failure to comply with these standards requires withdrawal from the program. Such students may, however, be eligible to transfer into another degree program. Guidance of the Registrar of the School of Computer Science should be sought in such cases.

To continue in the Co-operative stream of the Bachelor of Computer Science program, a student must, by the end of August each year, have gained at least 2.0 academic credits (other than work term report credits) during the past 12 months towards the B.C.S. degree and have a cumulative GPA of 8.0 or better in Computer Science and 6.5 or better overall; (GPAs are to include any failing grades). Failure to meet these standards requires withdrawal from the Co-operative option. Students required to withdraw from the Co-operative option are eligible to continue in the regular Bachelor of Computer Science program provided they meet the academic standards required for continuation in this program.

**Examinations**

General regulations on examinations are on p. 49. In addition, the following regulation applies to students in the B.C.S. program.

**Deferred Examinations**

Students unable to write a final examination because of illness or for compassionate reasons may apply within one week after the final examination to the School of Computer Science Registrar's office for permission to write a deferred examination. Permission can be granted only if the absence is fully and specifically supported by a medical certificate or other documents.

**Graduation****University Graduation Requirements**

See p. 49.

**Application to Graduate**

Students expecting to graduate in the Spring must make application on the form available in the School Registrar's office by February 1; those expecting to graduate in the Fall, by September 1; and those expecting to graduate in February, by December 1.

**Graduation Requirements**

To qualify for graduation with a Bachelor of Computer Science degree with Honours a student must:

1. present at least 20.0 approved credits beyond Qualifying-University year, including at least 13.0 credits at the 200-level or higher;



2. meet the program requirements of the School of Computer Science for at least one of the B.C.S. program options;
3. meet the minimum grade-point standards for Honours as stated below;
4. complete the program within seven calendar years of the entry to the course credit system;
5. be recommended by the School Council and the Faculty Board of the School of Computer Science.

To qualify for graduation with a Bachelor of Computer Science degree with Honours and Co-operative degree designations a student must:

1. present at least 22.0 approved credits beyond Qualifying-University year, including at least 15.0 credits at the 200-level or higher;
2. meet the program requirements of the School of Computer Science for at least one of the B.C.S. program options;
3. meet the minimum grade-point standards for Honours as stated below;
4. complete the program within seven calendar years of the entry to the course credit system;
5. successfully complete a minimum of four work terms;
6. be recommended by the School Council and the Faculty Board of the School of Computer Science.

### Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the GPA as follows:

#### Highest Honours

10.0 - 12.0 in Computer Science courses, and  
8.0 or better overall

#### High Honours

9.0 or better in Computer Science courses, and  
7.0 or better overall

#### Honours

6.5 or better in Computer Science courses, and  
5.0 or better overall

#### Co-operative Degree Designation

Graduates successfully completing the requirements for graduation from the Co-operative Education Option will receive a Co-operative degree designation in addition to the Honours designation.

### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Some of the following Computer Science courses are cross-listed from other parts of the Calendar. In every such case, only one course is actually offered and the two numbers are alternate identifiers for this single course. Students in the B.C.S. program should register in such a course under the Computer Science (95) number.

**Note:** In all courses with programming assignments, students usually find it necessary to be on campus at other than the scheduled lecture periods to make use of computing facilities.

#### Computer Science 95.101★

##### Introduction to Computers for the Arts and Social Sciences

This course is intended to give students in the social sciences a working knowledge of computers and their applications; computer fundamentals; use of computing facilities; introduction to graphical user interfaces; a sampling of software packages applied to problems in the social sciences.

Precludes additional credit for Computer Science 95.100★ and 95.104★. This course cannot be taken for credit by students in Business, Engineering, Computer Science or Science. Lectures three hours a week.

#### Computer Science 95.102★

##### Introduction to Systems Programming

A course designed to introduce the student to programming with procedures and primitive data types. Topics include: arrays, strings, pointers, heap and stack memory allocation and deallocation, iterative and recursive linked list manipulations, system/library calls.

Precludes additional credit for Computer Science 95.107★ and Engineering 91.166★.

Lectures three hours a week.

#### Computer Science 95.104★

##### Introduction to Computers for the Sciences

This course provides students with a working knowledge of computers and their applications. Topics include computer fundamentals and the use of application packages such as text processors, spreadsheets, databases and web browsers with particular reference to problems in Science.

Precludes additional credit for Computer Science 95.101★. This course cannot be taken for credit by students in the B.C.S. program or combined programs in Computer Science.

Lectures three hours a week.

#### Computer Science 95.105★

##### Introduction to Object-Oriented Programming

A first course in problem solving and computer programming designed for students who wish to specialize in Computer Science. Introduction to object-oriented programming: syntactic constructs, data abstraction, classification and inheritance, typing and polymorphism, testing and debugging.

Precludes additional credit for Engineering 91.166★.

Lectures three hours a week and one hour tutorial.

#### Computer Science 95.106★

##### Design and Implementation of Computer Applications

A continuation of Computer Science 95.105★ focusing on the design and implementation of complete applications including the user interface, the software architecture, and the interacting domain objects. Applications will make use of techniques such as text processing, symbolic and graphical manipulation and file processing.

Prerequisites: Computer Science 95.105★ or (with self-study of the programming language used) 95.108★.

Lectures three hours a week.

#### Computer Science 95.107★

##### Introduction to Structured Programming

A first course in computer programming, primarily for students in Science. Introduces basic sequencing, alteration, and looping control constructs, functional and procedural abstractions, data abstraction, and problem-solving in the context of computer programming.

Precludes additional credit for Engineering 91.166★ and Computer Science 95.102★ (if taken after 1996/97).

This course cannot be taken for credit by students currently registered in Computer Science programs.

Lectures three hours a week.

#### Computer Science 95.108★

##### Structured Programming Applications

A continuation of Computer Science 95.107★, primarily for students in Science. Designed to give students more experience at problem-solving using recursion, linked lists, trees, sorting and searching, and numerical techniques.

This course cannot be taken for credit by students currently registered in Computer Science programs.

Prerequisites: Computer Science 95.107★ or (with self-study of the programming language used) 95.105★.

Lectures three hours a week.



**Computer Science 95.185★****Discrete Structures I**

An introduction to discrete mathematics and discrete structures. Topics include: propositional and predicate calculus, Boolean algebra, introduction to complexity of algorithms, mathematical reasoning, counting, recurrences, relations, introduction to graphs. (Also listed as Mathematics 69.185★.)

Prerequisites: Two OACs in Mathematics and one of Computer Science 95.105★ or 95.107★ (which may be taken concurrently).  
Lectures three hours a week.

**Computer Science 95.202★****Abstract Data Types and Algorithms**

Introduction to the design and implementation of abstract data types and to the complexity analysis of data structures. Topics include: stacks, queues, lists, trees and graphs. Special attention is given to abstraction, interface specification and hierarchical design through the use of an object-oriented programming language.

Precludes additional credit for Engineering 94.202★.

Prerequisites: Computer Science 95.102★ and 95.105★.

Lectures three hours a week.

**Computer Science 95.203★****Computer Organization**

A thorough treatment of computer system organization. Processor architectures (RISC, CISC, superscalar). Instruction sets and addressing modes. Assembly language. Basics of digital logic and hardware construction. Memory organization and cache principles. System buses. Input/output methods and devices.

Precludes additional credit for Engineering 94.203★, 94.303★ for students in the Computer Science program and in combined programs with Mathematics or Chemistry.

Prerequisite: Computer Science 95.102★ or Engineering 91.166★.

Lectures three hours a week.

**Computer Science 95.204★****Programming in C++**

In-depth study of the programming language C++, with emphasis on features supporting the development of large efficient and reusable systems. Topics include: encapsulation, templates, references, constructors and destructors, operator overloading, memory management, exception handling, standard template library, programming by contracts, configuration management, documentation and testing.

Precludes additional credit for Engineering 94.204★.

Prerequisites: Computer Science 95.102★ or 95.107★, and 95.106★ or 95.108★.

Lectures three hours a week.

**Computer Science 95.205★****Internet Application Programming**

Design and implementation of Internet application programs. Topics include: fundamentals of the Web, introduction to client/server architectures, Internet programming, Web browsers, hypertext links, network programming.

Prerequisites: Computer Science 95.106★ or equivalent.

Lectures three hours a week.

**Computer Science 95.285★****Discrete Structures II**

A second course in theoretical aspects of computer science. Topics include: formal languages and automata theory, computability theory, complexity theory, graph theory and algorithms, NP-completeness.

Prerequisite: Computer Science 95.185★

Lectures three hours a week.

**Computer Science 95.300★****Operating Systems**

A first course in operating systems stressing fundamental issues in design: process management; memory management; process co-ordination and synchronization; interprocess communication; real-time clock management; i/o device drivers; file systems; frame-level network communication. Assignments involve the use, modification, and extension of a multitasking operating system.

Precludes additional credit for Engineering 94.301★.

Prerequisites: One of Computer Science 95.202★ or Engineering 94.202★, and one of Computer Science 95.203★ or Engineering 94.303★.

Lectures three hours a week.

**Computer Science 95.302★****Compiler Construction**

The structure, organization and design of the phases of a compiler are considered: lexical translators, syntactical translators, scope handlers, type checkers, code generators and optimizers. Components of a compiler will be implemented.

Prerequisite: Computer Science 95.202★ or permission of the School.

Lectures three hours a week.

**Computer Science 95.304★****Software Systems Development**

This course is concerned with the issues pertaining to the development of medium and large software systems. Topics include: software development processes, object-oriented notations and methodologies, interactive development environments, versioning, real-time issues, design patterns, requirements traceability and testing.

Precludes additional credit for Engineering 94.310★ and 94.480★.

Prerequisite: Computer Science 95.204★.

Lectures three hours a week.

**Computer Science 95.305★****Database Management Systems**

Introduces students to concepts of database management systems, database design and file structures. Topics include: entity-relationship modeling and object oriented database design, data models (relational, network and object oriented), the relational algebra, SQL, normalization theory, physical data organization, object oriented databases and OQL.

Precludes additional credit for Business 42.340★ and Engineering 94.301★.

Prerequisites: Computer Science 95.202★ and 95.204★, or Engineering 94.303★.

Lectures three hours a week.

**Computer Science 95.307★****Programming Paradigms**

An introduction to functional and logic programming. Topics include: semantics of functional programming, assignment-free programming, the meta-circular interpreter, recursive functions, Prolog, backtracking, cutting, negation.

Prerequisite: Computer Science 95.202★ or Engineering 94.202★.

Lectures three hours a week.

**Computer Science 95.308★****User Interface Architectures**

This course addresses architectures and tools for the design and implementation of user-interfaces driven application. Emphasis will be on case studies using libraries and visual programming tools. Examples may be drawn from object-oriented programming environments, Motif and Tcl/Tk.

Prerequisites: Computer Science 95.106★ and 95.204★.

Lectures three hours a week.

**Computer Science 95.320★****Co-operative Work Term Report I**

Prerequisites: Registration in the Co-operative Education Option of the Bachelor of Computer Science program and permission of the School.

**Computer Science 95.321★****Co-operative Work Term Report 2**

Prerequisites: Registration in the Co-operative Education Option of the Bachelor of Computer Science program and permission of the School.

**Computer Science 95.322★****Co-operative Work Term Report 3**

Prerequisites: Registration in the Co-operative Education Option of the Bachelor of Computer Science program and permission of the School.



**Computer Science 95.384★****Design and Analysis of Algorithms I**

An introduction to the design and analysis of algorithms. Topics include: recurrence relations, sorting and searching, divide-and-conquer, dynamic programming, greedy algorithms, amortized analysis. (Also listed as Mathematics 69.384★.)

Prerequisites: Computer Science 95.202★ and 95.285★ or equivalent.

Lectures three hours a week.

**Computer Science 95.385★****Discrete Structures and Applications**

Enumeration: elementary methods, inclusion and exclusion, recurrence relations, generating functions and applications. Graph theory and algorithms: connectivity, planarity, Hamilton and Euler paths. Error-correcting codes. (Also listed as Mathematics 70.385★.)

Prerequisites: One of Mathematics 69.218★ or 69.311★, 70.210.

Lectures three hours a week and one hour tutorial.

**Computer Science 95.386★****Numerical Analysis**

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. (Also listed as Mathematics 69.386★.)

Prerequisites: (I) Mathematics 69.102, 69.105 or 69.207★ (or 69.201 or 69.202); and (II) Mathematics 69.112 or 69.217★; and (III) knowledge of a computer language.

Lectures three hours a week and one hour tutorial.

**Computer Science 95.387★****Mathematical Software**

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g. linear systems, non-linear systems, optimization, or differential equations. (Also listed as Mathematics 69.387★.)

Prerequisite: Computer Science 95.386★.

**Computer Science 95.400★****Distributing Operating Systems**

An advanced course emphasizing the principles of distributed operating systems including networking protocols, distributed file systems, remote IPC mechanisms, graphical user interfaces, load balancing, and process migration. Case studies include current "standards" as well as novel systems under development.

Prerequisite: Computer Science 95.300★.

Lectures three hours a week.

**Computer Science 95.401★****Distributed Computing**

Overview of distributed computing. Topics include: computational models, communication complexity, design and analysis of distributed algorithms and protocols, fault-tolerant protocols, synchronous computations. Applications may include: communication in data networks, control in distributed system (e.g., election, distributed mutual exclusion), manipulation of distributed data (e.g., ranking).

Prerequisite: Computer Science 95.300★.

Lectures three hours a week.

**Computer Science 95.402★****Computer Graphics**

Principles and techniques of real-time 2D and 3D graphics: raster graphics algorithms, transformations (scaling, translation, rotations) and viewing, object modeling, texture mapped rendering, illumination, ray-tracing, hidden line and surface elimination. Other possible topics include: camera control, collision detection, articulated figures, 3D game engine development.

Prerequisite: Computer Science 95.202★ or permission of the School.

Lectures three hours a week.

**Computer Science 95.403★****Transaction Processing Systems**

Investigates concepts of on-line transaction processing. Traces transaction processes from their initiation (WWW Interfaces) to

their completions in client/server environments under concurrent executions and system failures. Topics include: transaction properties and models, embedded-SQL and database applications, query processing, concurrency, recovery, and some case studies.

Prerequisites: Computer Science 95.204★, and 95.305★ or Engineering 94.301★.

Lectures three hours a week.

**Computer Science 95.407★****Applied Artificial Intelligence**

A course emphasizing artificial intelligence techniques and programming. Sample topics include: knowledge-based systems, knowledge representation, heuristic search, natural language processing, symbolic machine learning, connectionism, evolutionary computation.

Prerequisite: Computer Science 95.307★.

Lectures three hours a week.

**Computer Science 95.409★****Introduction to Parallel and Systolic Computing**

Introduction to algorithms, architectures, and languages for parallel computing. Topics include: models of computation, parallel programming languages, performance measures for parallel algorithms, shared memory parallel machines, VLSI design methodologies, processor arrays, hypercube multiprocessors, parallel algebraic operations, parallel data structures and parallel searching, parallel geometric processing.

Prerequisite: Computer Science 95.384★.

Lectures three hours a week.

**Computer Science 95.410★****Multimedia Systems**

Introduction to Multimedia Systems and Virtual Reality. Topics include: basic sound and video formats, compression, image- and geometry-based model creation, stereo displays, immersion, texture mapping, VRML and virtual environments.

Prerequisite: Computer Science 95.402★.

Lectures three hours a week.

**Computer Science 95.413★****Computer Security and Cryptography**

Introduction to information security in computer and communication systems. Classical and public-key cryptosystems are overviewed. Applications to information schemes and digital signatures, key distribution and key agreement, authentication and secret sharing are also discussed.

Prerequisite: Computer Science 95.384★.

Lectures three hours a week.

**Computer Science 95.420★****Co-operative Work Term Report 4**

Prerequisites: Registration in the Co-operative Education Option of the Bachelor of Computer Science program and permission of the School.

**Computer Science 95.421★****Co-operative Work Term Report 5**

Prerequisites: Registration in the Co-operative Education Option of the Bachelor of Computer Science program and permission of the School.

**Computer Science 95.483★****Computable Functions**

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic, NP-completeness. (Also listed as Mathematics 70.483★.)

Prerequisite: Mathematics 70.210 or Computer Science 95.385★ or permission of the School.

**Computer Science 95.484★****Design and Analysis of Algorithms II**

A second course on the design and analysis of algorithms. Topics include: advanced recurrence relations, algebraic complexity, advanced graph algorithms, approximation algorithms, randomized algorithms. Also offered at the graduate level, with additional or different requirements, as Computer Science 95.573, for which additional credit is precluded.



Prerequisite: Computer Science 95.384★ or permission of the School.

Lectures three hours a week.

Computer Science 95.485★

**Theory of Automata**

Finite automata and regular expressions, properties of regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. (Also listed as Mathematics 70.485★.)

Precludes additional credit for Mathematics 70.565

Prerequisite: Computer Science 95.385★ or Mathematics 70.310 or permission of the School.

Lectures three hours a week.

Computer Science 95.486★

**Numerical Linear Algebra**

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. (Also listed as Mathematics 70.486★.)

Prerequisites: Mathematics 69.112 or 69.217★; and Mathematics 70.200 or 69.309★, or permission of the School.

Lectures three hours a week.

Computer Science 95.490★

**Advanced Topics in Computer Science**

Selected topics in Computer Science offered by members of the School of Computer Science.

Prerequisite: Permission of the School.

Lectures three hours a week.

Computer Science 95.491★

**Directed Studies**

A course of independent study under the supervision of a member of the School of Computer Science, open only to students in the

B.C.S. program. Students are required to obtain their supervisor's written approval prior to registration and are limited to two such courses in their programs.

Prerequisite: Permission of the School of Computer Science.

Computer Science 95.495★

**Honours Project**

As part of the Fourth-year program, each B.C.S. student is required to select and complete a major project in computer science. Students are required to submit written project proposals to the Honours Project Co-ordinator for approval normally during the term preceding the term of registration. Consult the Honours Project Co-ordinator for details.

Prerequisite: Registration in either the Bachelor of Computer Science program or one of the Combined Honours programs involving Computer Science and the permission of the School.

## Other Relevant Courses Offered

The following courses are not offered by the School of Computer Science but are relevant to the study of computer science. They may be taken for credit as computer science courses in the B.C.S. Program and the combined programs with Computer Science. For full descriptions of these courses please refer to the Calendar entries of the School of Business and the Department of Systems and Computer Engineering.

- **Courses Offered by the School of Business**

Business 42.230★, 42.240★, 42.440★, 42.442★, 42.446★, 42.447★

- **Courses Offered by the Faculty of Engineering**

Engineering 94.333★, 94.405★, 94.457★

# Criminology and Criminal Justice

## (Public Affairs and Management)

Telephone: 520-2588  
Fax: 520-6654

### Academic Administration

**Program Co-ordinator,** Katharine Kelly

**Administrative Assistant,** Sandra Rochon

**Placement Supervisor,** Cheryl Stout

#### Members of the Program Committee

Don Andrews (Psychology) • Walter DeKeseredy (Sociology) • Renate Mohr (Law)

### General Information

Through the interdepartmental Institute of Criminology and Criminal Justice, programs of study leading to the B.A. and B.A. (Honours) degrees in Criminology and Criminal Justice are available to students interested in a comprehensive and interdisciplinary approach to the study of Criminology and Criminal Justice. Students will acquire an in-depth understanding of criminal, delinquent, and deviant behaviour, theoretical and practical knowledge of criminal law and the criminal justice system, and societal reaction to crime and deviance. In these programs, students take courses from the three disciplines of Law, Psychology and Sociology that provide the topics and approaches needed to gain insight into the field of criminology while also completing a Concentration in one of these disciplines. Students accepted into the Major will have the opportunity to acquire applied knowledge by undertaking a field placement in an agency active in criminal justice.

### Admission Requirements

See the guidelines for B.A. (Honours) and B.A. programs on p. 41.

### Graduation Regulations

To be eligible to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations (see p. 82), and all Major regulations and requirements set out below. The B.A. requirement for Breadth is modified for students in this Major who must present 1.0 credit in either area 1 or 2 (see p. 72).

#### B.A. in Criminology and Criminal Justice with a Concentration in Law, Psychology or Sociology

The Major requirements are:

1. 8.0 required credits in the Major:

Criminology 48.391 or 1.0 credit in elective courses in the Major at the 300-level (see below); and

Law 51.100 and 51.204 and either 51.335★ or 51.336★; and

Psychology 49.100 and 49.240★ and 49.342★; and

Sociology 53.100 or Anthropology 54.100 or Sociology/Anthropology 56.100 and 53.255★ and 53.271★ and either 53.373★ or 53.388★.

2. Concentration credits. Students must declare a Concentration at the Registrarial Services Office prior to registration in their second year of study. Students must choose one of the three follow-

ing patterns from the contributing disciplines (note that each pattern incorporates courses required under 1, above):

*Law:* 51.100, 51.204, 51.335★ or 51.336★

2.0 further credits in Law at the 200-level or higher.

*Psychology:* 49.100, 49.240★, 49.342★, 49.200

1.5 further credits in Psychology at the 200-level or higher.

*Sociology:* 53.100 or 54.100 or 56.100

53.255★, 53.271★, 53.373★ or 53.388★, 53.203

1.0 further credits in Sociology at the 200-level or higher.

*Note:* The total number of courses in the Major and in the Concentration may not exceed 11.5 credits.

#### B.A. (Honours) in Criminology and Criminal Justice with a Concentration in Law, Psychology or Sociology

The Major requirements are:

1. 10.0 required credits in the Major:

Criminology 48.300 or Psychology 49.200 or Law 51.397★ (and 0.5 credit in Law at the 200-level or higher) or Sociology 53.203; and

Criminology 48.391 (or 1.0 credit in elective courses in the Major at the 300-level); and

Criminology 48.498 (or 1.0 credit in elective courses in the Major at the 400-level) and

Law 51.100 and 51.204 and either 51.335★ or 51.336★; and

Psychology 49.100 and 49.240★ and 49.342★; and

Sociology 53.100 or Anthropology 54.100 or Sociology/Anthropology 56.100 and 53.255★ and 53.271★ and either 53.373★ or 53.388★.

2. Concentration Credits: Students must declare a Concentration at the Registrarial Services Office prior to registration in their second year of study. Students must choose one of the following patterns of required Concentration credits in the contributing disciplines (note that each pattern incorporates courses required under 1, above):

*Law:* 51.100, 51.204, 51.335★ or 51.336★, 51.397★

1.0 further credits in Law at the 200-level or higher

1.5 further credits in Law at the 300-level or higher.

*Psychology:* 49.100, 49.240★, 49.342★, 49.200, 49.300

1.0 further credits in Psychology at the 200-level or higher

0.5 further credits in Psychology at the 300-level or higher.

*Sociology:* 53.100 or 54.100 or 56.100

53.255★, 53.271★, 53.373★ or 53.388★, 53.203

1.0 further credit in Sociology at the 200-level or higher



1.0 further credit in Sociology at the 300-level or higher (56.205 or 53.406 are highly recommended).

Elective credits in the Criminology and Criminal Justice Major may be chosen from the following list of courses:

Criminology 48.392;

Law 51.337★; 51.432★; 51.435★; 51.436★; 51.437★; 51.438★; 51.439★; 51.454★; 51.490; 51.491★; 51.492★

Psychology 49.210★; 49.260★; 49.343★; 49.357★; 49.364★; 49.490★; 49.492★

Sociology 53.256★; 53.453★; 53.474★; 53.491★; 53.492★

*Note:* The total number of courses in the Major and in the Concentration may not exceed 15.0 credits.

## Prerequisites:

Courses in the Major at the 200-level or higher have specific prerequisites which must be met.

Registration in Criminology 48.300 is limited to students eligible for Third-year or higher standing in the B.A. (Honours) program in Criminology and Criminal Justice. The following are acceptable alternative methodology courses for those who do not complete Criminology 48.300: Psychology 49.200; Sociology 53.203; or Law 51.397★ and 0.5 additional credits in Law at the 200-level or higher.

Registration in Criminology 48.498 (Honours Research Project) is available only to students with Fourth-year standing in the B.A. (Honours) program in Criminology and Criminal Justice who have a G.P.A. of 10.0 or better.

Topics studied in Criminology 48.498, Psychology 49.490★, 49.492★, Law 51.490, 51.491★, 51.492★, Sociology 53.491★ and 53.492★ must pertain to the legal, psychological or sociological analysis of crime or criminal justice and must be approved by the Coordinator.

Students may request permission to offer courses towards the Major which are not listed as electives, including those offered by the Criminal Justice and Social Policy Summer School as well as special topics courses offered from time to time by the Institute. Students should consult the Coordinator for a listing of courses approved as alternative electives.

## Field Placement Option

The Field Placement is offered at the 300-level. Students complete a 1.0 credit Field Placement during the Fall/Winter session. Enrolment in Fall/Winter session will be limited to not more than 80 students who have completed at least 9.0 credits, including all of the 100- and 200-level requirements in the Major. A floating cutoff will be used to identify the students with the highest G.P.A. over those required courses, who may then receive permission to register for the Field Placement. Allocation of Field Placements will be determined by the Field Placement Coordinator.

Students wishing to register for a Field Placement must apply to the Institute no later than May 1 of their Second year. If granted permission, students must register in Criminology 48.391 during

August registration. Students in the B.A. (Honours) program may receive permission to complete a 2.0 credit placement, in which case they must also register in Criminology 48.392.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Criminology 48.300

### Research Methodology in Criminology

Issues and research methodologies in the study of crime. Emphasis is on a critical evaluation of literature and methods used across disciplines. Topics of professional interest, including ethics, are also considered. Students may be required to complete independent research projects.

Precludes additional credit for Law 51.397★, Psychology 49.200 and Sociology 53.203.

Prerequisites: Third-year standing in the B.A. (Honours) program in Criminology and Criminal Justice and permission of the Institute.

Lectures and seminar three hours a week, laboratory one hour a week.

Criminology 48.391

### Practicum in Criminology and Criminal Justice I

Through a field placement in an agency setting, students are provided the opportunity to obtain practical involvement in various aspects of criminal justice. Discussion and presentations in the Seminar Class and required term papers integrate applied, theoretical and empirical knowledge.

Precludes additional credit for Law 51.395★, Psychology 49.393★, 49.394★, and Sociology 53.386★.

Prerequisites: Third-year standing in Criminology and Criminal Justice and permission of the Institute.

Field placement eight hours a week, seminar three hours a week.

Criminology 48.392

### Practicum in Criminology and Criminal Justice II

Through a field placement in an agency setting, students are provided the opportunity to obtain practical involvement in various aspects of criminal justice. Discussion and presentations in the Seminar Class and required term papers integrate applied, theoretical and empirical knowledge.

Precludes additional credit for Law 51.395★, Psychology 49.393★, 49.394★, and Sociology 53.386★.

Prerequisites: Third-year Honours standing in Criminology and Criminal Justice and permission of the Institute.

Field placement eight hours a week, seminar three hours a week.

Criminology 48.498

### Honours Research Project

A research project conducted under the direct supervision of a Faculty Advisor from Psychology, Law or Sociology. Mandatory workshops and symposiums are scheduled during the year.

Prerequisites: Fourth-year standing in the B.A. (Honours) program in Criminology and Criminal Justice with a GPA of 10.0 or better in the Major and permission of the Institute.

Workshops and symposiums as scheduled.

# Directed Interdisciplinary Studies

## (Arts and Social Sciences)

2216 Dunton Tower  
Telephone: 520-2368

### Academic Administration

**Program Co-ordinator,** Charles Gordon

**Members of the Committee**

Fran Cherry • Doug Saveland • Rob Shields • Shelagh Squire •  
John Taylor • Karen Warner

### General Information

The degree of Bachelor of Arts in Interdisciplinary Studies is pursued by means of a plan of study proposed by the student. Lists of courses from which proposals may be drawn are provided in the following areas: Aboriginal Studies, African Studies, Asian Studies, Labour Studies, Latin American and Caribbean Studies, Medieval Studies, United States Studies and Urban Studies. (For Visual and Performing Arts, see the listings for the School for Studies in Art and Culture, p. 139. For Technology, Society, Environment Studies, see p. 431). The student may propose a plan of study in an area of special interest to them that they define themselves.

The program is administered by the Institute for Interdisciplinary Studies (see p. 297 for the Institute's general listing).

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Committee regulations and requirements set out below.

### B.A. (Honours) Program

Students applying for the B.A. (Honours) program in Directed Interdisciplinary Studies must complete the prescribed application form, available from the Institute for Interdisciplinary Studies office. They are required to list 4.5 credits which meet the requirements listed in **Part A** below, and 9.5 credits which meet the requirements listed in **Part B** below, along with honours essay (04.498). The credits in **Part B** must be related to a significant theme or field of interest and fit into a coherent pattern. It is expected that the credits of **Part A** will be related to that theme as well. On acceptance of the proposed pattern of study, the credits described above, or variations agreed to by the Committee, become a requirement for completion of the degree.

#### Part A

1. 1.0 credit that addresses the temporal dimension of human societies, analyzing times before the current era, and societies other than our own.
2. 1.0 credit that addresses the artifacts of the imagination, in literature and other forms, that addresses the life of the imagination and the culture.
3. 1.0 credit that addresses the understanding of social and/or natural processes, and the ways in which that understanding is obtained in science and social science.
4. 1.0 credit that addresses matters of human values, ethics and social responsibilities.
5. Interdisciplinary Studies 04.391 ★.

Lists of appropriate courses to meet these requirements will be provided.

#### Part B

9.5 credits as proposed by the student and approved by the committee including:

1. 04.498 Honours Essay.
2. At least 4.0 credits in one discipline.
3. At least 3.0 credits at the 400-level or above.

### B.A. Program

Students applying for the B.A. program in Directed Interdisciplinary Studies must complete the prescribed application form, which is available from the Institute for Interdisciplinary Studies office. They are required to list 4.5 credits which meet the requirements listed in **Part A** below, and 5.5 credits which meet the requirements listed in **Part B** below. The credits in **Part B** must be related to a significant theme or field of interest and fit into a coherent pattern. It is expected that the credits of **Part A** will be related to that theme as well. On acceptance of the proposed pattern of study, the credits described above, or variations agreed to by the Committee, become a requirement for completion of the degree.

#### Part A

1. 1.0 credit that addresses the temporal dimension of human societies, analyzing times before the current era, and societies other than our own.
2. 1.0 credit that addresses the artifacts of the imagination, in literature and other forms, or that addresses the life of the imagination and the culture.
3. 1.0 credit that addresses the understanding of social and/or natural processes, and the ways in which that understanding is obtained in science and social science.
4. 1.0 credit that addresses matters of human values, ethics and social responsibilities.
5. Interdisciplinary Studies 04.391 ★.

Lists of appropriate courses to meet these requirements will be provided.

#### Part B

1. 5.5 credits as proposed by the student and approved by the committee.
2. At least one of these credits must be at the 300-level.



## B.A. (Honours) and B.A.

1. Prior to submitting a formal application, students are advised to consult with the Program Co-ordinator for assistance in working out a suitable pattern of courses.
2. To allow time for adequate appraisal by the Committee, the proposal should be submitted as early as possible before the year of entry to the program (by June 1 for September registration and by November 1 for January registration).
3. Students may apply for admission to the program at any time after completion of their first 5.0 credits and before they begin their last 5.0 credits towards the degree.
4. Normally, 3.0 credits in the student's field of interest are to be included among the last 5.0 credits taken towards the degree.
5. In order to graduate, students must have an overall GPA of 4.0 or better in all 15.0 credits counted towards the degree, as well as a GPA of 4.0 or better in the 10.0 credit pattern approved for the degree.

## Interdisciplinary Subject Areas

The Institute for Interdisciplinary Studies sponsors the interdisciplinary subject areas described below. There are no majors in these areas but there is strong teaching and active research interest. Students interested in pursuing work in any of these areas either through the Directed Interdisciplinary Studies major or in conjunction with a disciplinary major should arrange a meeting with the area co-ordinator. Where a co-ordinator is not named, contact the office of the Institute for Interdisciplinary Studies.

In all cases detailed descriptions of the courses listed for each area can be found in the various departmental courses listings. Courses at the 500-level are described in the Calendar of the Faculty of Graduate Studies and Research.

### Aboriginal Studies

*Co-ordinator:* Armand Garnett Ruffo

Individual departments at Carleton offer courses concerned with aboriginal issues. Growing interest in Canadian first peoples has promoted a gradual increase in courses about aboriginal cultures and an increase in related activities on campus. No degree program in aboriginal studies exists, but students may submit a coherent pattern of courses selected from the list below for a B.A. (Honours) or B.A. degree in Directed Interdisciplinary Studies, according to the procedures described for this degree in the Calendar. See p. 213.

#### Courses

##### *Applied Language Studies*

23.190, 23.195

##### *Art History*

11.205★, 11.206★, 11.313★, 11.314★, 11.404★, 11.405★, 11.502★, 11.507★

##### *Canadian Studies*

12.510

##### *Geography*

45.351★, 45.431★, 45.570★

##### *History*

24.353

##### *Law*

51.354★, 51.436★

##### *Music*

30.230★, 30.310, 30.512★

##### *Political Science*

47.402★

##### *Sociology and Anthropology*

54.207★, 54.318★, 54.319★, 54.470★, 54.516★, 54.517★, 56.383★, 56.384★, 56.465★

##### *Other*

Art History, Canadian Studies, English, Law, Linguistics and Applied Language Studies, and Sociology/Anthropology have special topics courses which, from year to year, may focus on aboriginal issues.

### African Studies

*Co-ordinator:* Fiona Mackenzie

Although there is no degree program in African Studies at Carleton, there is a strong teaching and research interest. Courses relating to Africa have been given in various departments and schools for many years and students can select these courses as part of their degree programs.

Students may also submit a pattern of courses of African Studies for a B.A. (Honours) or B.A. degree (Directed Interdisciplinary Studies) according to the procedures described for this degree in the Calendar. (See p. 213.)

#### Courses

##### *Applied Language Studies*

23.130

##### *Art History*

11.313★

##### *Economics*

43.363★, 43.457★, 43.458★

##### *English*

18.496★

##### *Geography*

45.329★, 45.330★, 45.395★, 45.520★, 45.540★, 45.544★

##### *History*

24.275

##### *International Affairs*

46.529★, 46.533★, 46.537★, 46.542★, 46.563★, 46.568★, 46.581★

##### *Law*

51.563★

##### *Music*

30.208★, 30.231★, 30.251★

##### *Political Science*

47.310, 47.344★, 47.352★, 47.414★, 47.415★, 47.423★, 47.482★, 47.517★, 47.522★, 47.523★, 47.545★, 47.581★

##### *Public Administration*

50.573★

##### *Sociology and Anthropology*

56.235, 53.544★

### Asian Studies

*Co-ordinator:* P.J. Davidson

No degree program for Asian studies exists but members of the Committee for Asian Studies offer a wide variety of courses about Asia. Research activities are encouraged through such units as the Asian Pacific Research and Resource Centre. The University is a member of the Shastri Indo-Canadian Institute. The Norman Paterson School of International Affairs supports graduate studies and research on Asia. Students may submit a coherent pattern of courses selected from the list below for a B.A. (Honours) or B.A.

degree (Directed Interdisciplinary Studies), according to the procedures described for this degree in the Calendar. (See p. 213.)

## Courses

### *Applied Language Studies*

23.110, 23.115, 23.120, 23.125, 23.130, 23.140, 23.150, 23.160

### *Business*

42.463★

### *Comparative Literary Studies*

17.204★, 17.205★

### *Economics*

43.457★, 43.458★, 43.487★, 43.555★

### *Geography*

45.540★

### *History*

24.170, 24.278, 24.285, 24.286, 24.385★, 24.386★, 24.485

### *International Affairs*

46.508, 46.527★, 46.557, 46.560, 46.561★, 46.567★, 46.569, 46.580★

### *Music*

30.209★

### *Political Science*

47.312, 47.315, 47.332★, 47.483★, 47.484★, 47.518★

### *Religion*

34.105★, 34.106★, 34.109★, 34.278, 34.320★, 34.342★

## Labour Studies

*Co-ordinator:* To be announced

The Committee on Labour Studies, consisting of faculty members with research and teaching interests in labour, acts as a co-ordinating unit for activities in this area. An interdisciplinary Labour Studies Research and Resource Centre has been established for use by the University community and the public at large. The University offers a wide range of courses in the humanities and social sciences relating to labour, and students can select those courses as part of their degree program.

Students may also submit a coherent pattern of courses in Labour Studies for a B.A. (Honours) or B.A. degree (Directed Interdisciplinary Studies). Assistance in planning such a pattern is available from the co-ordinator.

## Courses

In developing a pattern in Labour Studies, the student can choose from the following suggested basic and related courses.

### Basic Courses

#### *Business*

42.312★, 42.317★

#### *Economics*

43.356★, 43.357★, 43.436★, 43.465

#### *History*

24.222, 24.331★, 24.335, 24.439

#### *Law*

51.341★, 51.345★, 51.440★, 51.445★

#### *Philosophy*

32.220, 32.284★, 32.330

#### *Political Science*

47.306★, 47.412★, 47.413★, 47.416★, 47.431★, 47.432★

#### *Sociology/Anthropology*

53.257★, 53.258★, 53.346★, 53.348★, 53.381★, 56.458★

## Related Courses

### *Business*

42.311★, 42.413★

### *Economics*

43.325, 43.344★

### *History*

24.234, 24.235, 24.270, 24.325★, 24.329★, 24.330★, 24.332, 24.337, 24.370, 24.433, 24.458

### *Law*

51.203, 51.205, 51.301, 51.321★, 51.353

### *Philosophy*

32.202, 32.409

### *Political Science*

47.200, 47.335★, 47.345★, 47.400A

### *Sociology*

53.247, 54.333★, 53.345★, 53.347★, 53.433★, (Law 51.417★), 53.452★

Other courses in specific disciplines may be applicable; students should consult advisers in these disciplines.

## Latin American and Caribbean Studies

*Co-ordinator:* To be announced

At present, no degree program in Latin American and Caribbean Studies exists at Carleton. It is possible, however, for students to construct a program for a B.A. (Honours) or B.A. degree (Directed Interdisciplinary Studies) that could focus on the Latin American and Caribbean region. (See p. 213 for the prescribed procedures for this Degree.)

Of particular interest to some students may be a B.A. (Honours) or B.A. degree in French with supporting work in one or more of the Social Sciences, or a Social Science program with supporting work in French. The same combinations would be possible for those students interested in English and the English Speaking Caribbean.

Courses with a Latin American and Caribbean content are listed below. Detailed course descriptions may be found in the departmental listings of this Calendar. Graduate level courses are described in the Calendar of Graduate Studies and Research.

Knowledge of languages is indispensable for the study of the region. The language courses relevant for Latin America are described under the listings of the Departments of Spanish and French in this Calendar.

## Courses

### *Economics*

43.363★, 43.457★, 43.458★

### *English*

18.496

### *Film Studies*

19.421★

### *French*

20.470★, 20.471★

### *Geography*

45.220★, 45.329★

### *History*

24.236, 24.237, 24.371★, 24.375★, 24.376★, 24.471

### *International Affairs*

46.533, 46.561, 46.564, 46.568, 46.581



*Music*

23.230★

*Political Science*

47.215, 47.260, 47.311, 47.318★, 47.414★, 47.415★

*Public Administration*

50.515, 50.517, 50.567

*Social Work*

52.519

*Sociology and Anthropology*

54.318★, 54.333★, 53.360, 56.465★

**Medieval Studies**

*Co-ordinator:* D. le Berrurier

The University offers a wide range of courses in the humanities and social sciences relating to the Middle Ages, and students can select these courses as part of their degree program.

Students may also submit a coherent pattern of courses in Medieval Studies for a B.A. (Honours) or B.A. degree (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 213. Contact the Co-ordinator for assistance in planning a program.

**Courses**

*Art History*

11.220★, 11.221★, 11.325★, 11.327★, 11.328★, 11.393★, 11.422★, 11.423★

*Classics*

13.302, 13.303, 13.402

This Department offers several courses in Greek and Latin. Medieval Latin may be taken on a tutorial basis.

*English*

18.312, 18.322, 18.428★, 18.492★

*French*

20.261★

*German*

22.430

*History*

24.205, 24.302, 24.303, 24.306★, 24.307★, 24.402, 24.405, 24.406

*Italian*

26.340

*Music*

30.200★, 30.430★

*Philosophy*

32.225, 32.473★, 32.474★

*Political Science*

47.334

*Spanish*

38.415★, 38.416★

**United States Studies**

*Co-ordinator:* To be announced

No degree program in United States Studies exists, but students may utilize the considerable number of relevant courses already offered at Carleton to develop a relevant plan of study in this area. The aim of the United States Studies concentration within Directed Interdisciplinary Studies is to introduce students to a broad and systematic study of the United States and its peoples; to give a broad understanding of their history, culture and society and to

study the relationships between these various aspects of American experience.

**Courses**

*Art History*

11.305★, 11.306★, 11.406★

*Economics*

43.305★, 43.426★

*English*

18.272, 18.371, 18.373, 18.471★, 18.478★, 18.479★

*Film Studies*

19.100, 19.325

*History*

24.236, 24.240, 24.334★, 24.341★, 24.342★, 24.344, 24.346★, 24.347★, 24.348, 24.349, 24.440, 24.442, 24.443, 24.491

*Interdisciplinary*

04.441

*Music*

30.205★, 30.206★, 30.207★, 30.312★

*Political Science*

47.100, 47.322, 47.420★, 47.421★, 47.466★

*Sociology and Anthropology*

56.100, 53.100

**Urban Studies**

*Co-ordinator:* Charles Gordon

The Interfaculty Committee on Urban Studies has drawn up the following list of undergraduate courses in urban studies currently offered at Carleton.

Students may submit a coherent pattern of courses in urban studies for a B.A. Honours or B.A. degree (Directed Interdisciplinary Studies) in accordance with the procedures described for this degree in the Calendar, p. 213. Assistance in planning such a program is available from members of the Committee on Urban Studies.

**Courses**

*Architecture*

76.308★, 76.315★, 76.328★, 76.423★ (see Sociology 53.339★), 76.424★ (see Sociology 53.424★), 78.323★, 78.340★, 78.345★, 78.349★

*Art History*

11.302★, 11.305★, 11.350★

*Economics*

43.480

*Engineering*

82.334★, 82.433★, 82.435★

*Geography*

45.220★, 45.320★, 45.336★, 45.423★, 45.427★, 45.433★, 45.442★

*Earth Sciences*

67.417★

*History*

24.329★, 24.330★

*Law*

51.374★

*Physics*

75.291★, 75.292★

**Political Science**

47.302★, 47.303★, 47.410★

**Sociology and Anthropology**

56.253★, 53.254★, 53.260★, 53.339★, 53.424★, 53.456★

**Visual and Performing Arts**

For this area of study please consult the School for Studies in Art and Culture (see p. 139).

**Technology, Society, Environment**

For this area of study please see p. 431.

**Courses**

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Interdisciplinary 04.391★

**Themes in Interdisciplinary Inquiry**

The course will examine topics chosen by the interdisciplinary faculty, along with various methods of inquiry and styles of thought that may be brought to bear upon them. Student reading and research will compare, contrast and synthesize various perspectives

Prerequisite: Third-year standing in Directed Interdisciplinary Studies, or permission of the Institute.  
Seminar three hours a week.

Interdisciplinary 04.441★

**A Seminar in United States Studies**

A required course for students in United States Studies area in Directed Interdisciplinary Studies designed to allow discussion and research on topics of an interdisciplinary nature.

Interdisciplinary 04.498

**Honours Project**

Interdisciplinary research project for Honours students in the Fourth year of all IIS programs. In selecting a project, students must consult their Program Coordinator. Only the Program Coordinator can assign a supervisor or grant approval to register in this course. Arts and Social Sciences regulations governing Honours Research Essays and Honours Thesis apply.

Registration in this course is limited to students in the Fourth year of a B.A. (Honours) program in IIS.



# Earth Sciences

## (Science)

304 Tory Building  
Telephone: 520-4400  
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### Academic Administration

Chair, R.P. Taylor

### Teaching Staff

Professor Emeritus

**F.K. North**, *M.A., D.Phil. (Oxford)*

Professors

**Keith Bell**, *B.Sc. (Leeds), D.Phil. (Oxford)* • **R.L. Brown**, *B.Sc. (McGill), Ph.D. (Edinburgh)* • **Giorgio Ranalli**, *D.Geol. (Rome), M.Sc., Ph.D. (Illinois)* • **George B. Skippen**, *M.Sc. (McMaster), Ph.D. (Johns Hopkins)* • **Richard P. Taylor**, *B.Sc., Ph.D. (Leicester)* • **D.H. Watkinson**, *B.Sc., M.Sc. (McMaster), Ph.D. (Pennsylvania State)*

Associate Professors

**Gail M. Atkinson**, *B.Sc. (Carleton), M.Eng.Sc., Ph.D. (Western)* • **John Blenkinsop**, *B.Sc., M.Sc., Ph.D. (British Columbia)* • **Sharon D. Carr**, *B.Sc. (Calgary), M.Sc., Ph.D. (Carleton)* • **George R. Dix**, *B.Sc., (Queen's), M.Sc. (Memorial), Ph.D. (Syracuse)* • **Frederick A. Michel**, *B.Sc. (Queen's), M.Sc., Ph.D. (Waterloo)* • **R. Timothy Patterson**, *B.Sc., B.A. (Dalhousie), Ph.D. (California at Los Angeles)* • **Claudia Schröder-Adams**, *B.Sc. (Technical University, Munich), M.Sc. (Christian-Albrechts), Ph.D. (Dalhousie)*

Instructor

**I. Munro**, *B.A. (Western Ontario), M.Sc. (Waterloo)*

Adjunct Research Professors

**I.A. Beresnev**, *Department of Earth Sciences, Carleton University* • **R.J. Berman**, *Geological Survey of Canada* • **B.L. Cousens**, *Department of Earth Sciences, Carleton University* • **J.A. Donaldson**, *Department of Earth Sciences, Carleton University* • **H.L. Gibson**, *Department of Geology, Laurentian University* • **S. Hanmer**, *Geological Survey of Canada* • **M.D. Hannington**, *Geological Survey of Canada* • **J. Kukalova-Peck**, *Department of Earth Sciences, Carleton University* • **D.A. Leckie**, *Geological Survey of Canada* • **R. Parrish**, *Geological Survey of Canada* • **R. Rainbird**, *Geological Survey of Canada* • **T. Setterfield**, *WMC International Ltd.* • **W. Shilts**, *Geological Survey of Canada* • **R. Stern**, *Geological Survey of Canada*

Adjunct Professors

**G. Chao** • **K. Hooper** • **R. Yole**

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 117), in addition to all departmental regulations and requirements as set out below.

The designation of the Honours degree awarded for students in the Honours Geology program will be determined on the basis of their GPA for the 10.5 required credits of Geology as stated in the program requirements.

The designation of the Honours degree awarded for students in the Combined Honours programs will be determined on the basis of their GPA for all required credits in the two major subjects as stated in the respective program requirements.

All Major and Honours students should note that their selection of Science courses, including Mathematics, should be made with the prerequisites for subsequent Geology courses in mind.

The Department of Earth Sciences at Carleton University and the Department of Geology at the University of Ottawa offer an integrated program of Fourth-year courses. With the prior permission of the Department and University, students may enroll in Fourth-year courses offered at the other university. The following list shows the equivalence of similar courses offered by the two departments. Credit is given for only one course in any given pair.

67.403★ / GEO 4300 Directed Studies in Earth Sciences  
67.422★ / GEO 4371 Advanced Mineral Deposits  
67.425★ / GEO 4342 Groundwater Geochemistry  
67.435★ / GEO 4365 Carbonate Sedimentology  
67.442★ / GEO 4322 Advanced Structure  
67.451★ / GEO 4362 Advanced Igneous Petrogenesis  
67.452★ / GEO 4363 Advanced Metamorphic Petrology  
67.482★ / GEO 4381 Geochemistry and Isotope Geology  
67.484★ / GEO 4391 Exploration Geophysics  
67.487★ / GEO 4321 Advanced Field Studies  
67.498 / GEO 4900 Honours Thesis

It is also possible, with permission, to choose a Fourth-year course without equivalent (67.4xx at Carleton, GEO 4yyy at Ottawa). The following is a list of eligible courses at the University of Ottawa. Students should consult the Calendar of both universities when choosing their Fourth-year program.

- GEO 4300 Selected Topics in Earth Sciences
- GEO 4312 Taphonomy
- GEO 4329 Principles of Rock Deformation
- GEO 4332 Permafrost Geomorphology
- GEO 4352 Quantitative Analysis in Geology
- GEO 4364 Siliciclastic Sedimentology

The courses not included in either of the above lists (67.423★, 67.431★, 67.432★, 67.464★, 67.481★, 67.483★, and 67.485★) are usually offered at Carleton, although not all in any given year. Consult course descriptions for details.

Third-year students possessing prerequisites may be admitted to Fourth-year courses with the permission of the Department.

Enrolment in 200-level courses may be restricted due to limited physical resources.

## Honours Program

Faculty requirements concerning Honours standing must be maintained. (See p. 117.)

### Honours in Geology

1. Courses as prescribed for the Major program are required, except that Geology 67.498 (Thesis) is one of the mandatory credits in Geology, and 1.0 credit in Mathematics beyond First-year level, and/or Computer Science is mandatory in the group of 6.0 credits required in other sciences.

2. The departmental language requirement must be met before completion of the Third year by passing a minimum of 0.5 credit (e.g. French 20.106★) in, or demonstrating reading proficiency in, a language other than English, that is acceptable to the Department.

### Earth Sciences Co-operative Option

General information on Co-op programs can be found on p. 39.

#### Operation of the Co-operative Option

The option is administered by the Co-operative Program Committee which is responsible for securing potential employers, arranging interviews, and managing the program. The details of the program are provided in the *Earth Sciences Co-op Student Handbook*.

#### Admission Requirements

Students of good standing in the Honours Earth Sciences program may apply for admission to the B.Sc. Honours Co-operative Option, on completion of the First, Second or Third Year of the B.Sc. Honours Earth Sciences program. To be eligible for admission, a student must:

1. be registered as a full-time student in the Earth Sciences Honours program;
2. have an GPA of 8.0 or better in Honours Geology and an overall GPA of 6.5 or better;
3. be eligible to work in Canada.

Meeting the above requirements will only establish eligibility to enter the program. Enrollment in the Co-operative Option is limited and depends on the prevailing job market. Application forms for admission to the Co-operative option are available from the Co-op Office for Engineering and Science and should be submitted before May 15th, September 15th or January 15th.

#### The Work/Study Sequence

There are 3 four-month work terms. The timing of the employment terms is flexible. Examples include:

- (a) summer employment terms following Years 2, 3 and 4;

(b) extended summer and fall employment term following Year 3 and summer employment following either Year 2 or Year 4.

If no suitable job placements can be made, the student will revert to the regular Honours program.

#### Continuance in the Program

During work terms, students must register in one of the three work term courses: 67.201★, 67.301★, or 67.401★; these courses will be graded *Sat* or *Uns*.

### Combined Honours in Geology and Biology

Program advisers are C.J. Schröder-Adams and S.B. Peck.

Students desiring a comprehensive basic training in both biology and geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in Biology 61.103★ and 61.104★, and Geology 67.100.

Course requirements of the Combined Honours program are as follows:

1. Biology 61.103★ and 61.104★, Geology 67.100, Mathematics 69.107★ and 69.117★. One of Chemistry 65.100, Physics 75.101★ and 75.102★, or 75.107★ and 75.108★. (The omitted subject, i.e. Chemistry or Physics, must have been taken at the OAC level);
2. 10.0 credits in Biology (or Biochemistry) and Geology beyond First-year level, including at least a 0.5 credit field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 credits may be 200-level courses;
3. Biology 61.498 or Geology 67.498;
4. 0.5 credit in Statistics and 0.5 credit in Computer Science. (Mathematics 69.257★ and Computer Science 95.104★ are recommended);
5. 3.0 optional credits, at least 2.0 of which must be acceptable credits offered by the Faculties of either Arts and Social Sciences or Public Affairs and Management;
6. 1.0 Science elective credit;
7. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in, one of French, German, Russian, Spanish, Italian, Latin, Greek or any language acceptable to the committee and in which suitable arrangements can be made for the examination.

### Combined Honours in Geology and Chemistry

Program advisers are G.B. Skippen and R.A. Shigeishi.

A grade of C+ or better in both Chemistry 65.100 and Geology 67.100 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Chemistry 65.100, 65.211★, 65.212★, 65.232★, 65.233★, 65.353★, 65.354★ and 1.0 Chemistry credit at the 400-level;
2. Geology 67.100, 67.223★, 67.225★, 67.228★, 67.281★, 1.0 Geology credit at the 300-level and 1.0 Geology credit at the 400-level;
3. Chemistry 65.498 or Geology 67.498;
4. 1.0 Chemistry or Geology credit;
5. Mathematics 69.107★, 69.117★, 69.207★ and 0.5 Mathematics credit at the 200-level;
6. Physics 75.101★ and 75.102★;
7. 2.0 Science credits, of which 1.0 must be outside Chemistry and Geology;
8. 2.0 arts or social science credits;
9. 1.0 elective credit;
10. A language requirement must be met during the Third year by passing a course in or demonstrating reading proficiency in one of French, German or Russian.



A typical program is as follows:

#### *First Year*

Chemistry 65.100;  
Geology 67.100;  
Mathematics 69.107★ and 69.117★;  
Physics 75.101★ and 75.102★;  
1.0 arts or social science credit.

#### *Second Year*

Chemistry 65.211★, 65.212★, 65.232★, 65.233★;  
Geology 67.223★, 67.225★, 67.228★ and 67.281★;  
Mathematics 69.207★ and 0.5 Mathematics credit at the 200-level.

#### *Third Year*

Chemistry 65.353★ and 65.354★;  
Geology 67.323★ and 67.324★;  
1.0 Chemistry or Geology credit;  
1.0 Science credit;  
1.0 arts or social science credit.

#### *Fourth Year*

Chemistry 65.498 or Geology 67.498;  
1.0 Chemistry credit at the 400-level;  
1.0 Geology credit at the 400-level;  
1.0 Science credit;  
1.0 elective credit.

### **Combined Honours in Geology and Physical Geography**

Program adviser is F.A. Michel.

A grade of C+ or better in Geography 45.105/Geology 67.105 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Geology 67.105/Geography 45.105<sup>a</sup>, Chemistry 65.100, Mathematics 69.107★ and 69.117★, Physics 75.101★ and 75.102★, or 75.107★ and 75.108★.
2. 5.0 credits in Geology beyond First-year level, including Geology 67.223★, 67.225★, 67.228★, 67.285★<sup>b</sup>, 2.0 credits in Geology at the 300-level or above, and 1.0 credit in Geology at the 400-level;
3. 5.0 credits in Physical Geography beyond First-year level from list on p. 261, including Geography 45.210★, 1.5 credit in Physical Geography at the 200-level or above, Geography 45.302★, 45.312★, 45.315★, 45.318★, 1.0 credit in Physical Geography at the 400-level;
4. Geography 45.496 or Geology 67.498;
5. 1.0 credit in Mathematics beyond the 100-level; and/or in Computer Science. (Mathematics 69.257★ and Computer Science 95.104★ are recommended.)
6. 2.0 arts or social science elective credits<sup>c</sup>;
7. 2.0 credits chosen from Arts, Social Sciences, Science or Engineering.

<sup>a</sup> Students who have taken Geology 67.100 may, with permission of the program advisers, substitute Geology 67.100 for Geology 67.105/Geography 45.105.

<sup>b</sup> Geology 67.285★ precludes additional credit for Geography 45.299★.

<sup>c</sup> A Human Geography course is recommended in the program.

### **Combined Honours in Geology and Geography: Concentration in Terrain Science**

Program adviser: To be announced

Terrain science is the study of the Earth's surface as a physical feature: analysis of its geometry and geological origin; modification by climate, surficial processes, and human interaction; surface and groundwater distribution and chemistry; and methods and criteria to evaluate potential use. The program provides a basic framework that allows students to specialize in Fourth year in some aspect of terrain science.

A grade of C+ or better in Geology 67.105/Geography 45.105 and overall Honours standing are required for admittance to the program

Students must consult with the department program adviser about suitable electives and especially concerning possible substitution of courses alternate to those listed. A typical schedule follows:

#### *First Year:*

Geology 67.105/Geography 45.105 or Geology 67.100;  
Chemistry 65.100;  
Mathematics 69.107★ and 69.117★;  
Physics 75.101★ and 75.102★ or 75.107★ and 75.108★;  
1.0 arts or social science credit.

#### *Second Year*

Geology 67.223★, 67.225★, 67.228★, 67.282★, 67.285★;  
Geography 45.206★ (Mathematics 69.257★ may be substituted), 45.207★, 45.210★, 45.211★;  
Computer Science 95.103★ or 95.104★ or 95.107★.

#### *Third Year*

Geology 67.321★, 67.323★, 67.325★, 67.386★;  
Geography 45.302★, 45.312★, 45.315★, 45.318★;  
1.0 arts or social science credit.

#### *Fourth Year*

Geology 67.498 or Geography 45.496;  
Geography 45.411★, 45.412★;  
1.0 Geology credit at the 400-level;  
1.0 Science credit;  
1.0 elective credit.

## **Major Program**

The B.Sc. program in Geology is of four years' duration beyond the OSSD or Qualifying-University year. A total of 20.0 credits is required as follows:

1. The credit requirements of the First year of the general B.Sc. program. (See p. 116.)

2. At least 10.5 credits in Geology, of which Geology 67.100, 67.223★, 67.225★, 67.228★, 67.231★, 67.236★, 67.281★, 67.282★, 67.321★, 67.323★, 67.324★, 67.325★, 67.385★ and 67.386★ are mandatory. (Geology 67.100 may be taken either in Qualifying-University or First year.)

Students who have taken Geology 67.105 and attained a grade of B- or better may, with permission of the Department, substitute that course for 67.100.

3. At least 6.0 credits in the other sciences above Qualifying-University year level. Among these, Mathematics 69.107★ and 69.117★, Chemistry 65.100, and Biology 61.103★ and 61.104★ or Physics 75.101★ and 75.102★, or 75.107★ and 75.108★ are mandatory. At least 3.0 First-year Science credits must be passed before registration for Second-year Geology courses will be permitted, except that, if Geology 67.100 has been taken in Qualifying-University year, a Second-year Geology credit may be substituted.

4. 2.0 approved arts or social science credits.

5. 1.5 credits chosen from Science, Arts, Social Sciences or Engineering.

6. A working knowledge of elementary biology is required for Geology 67.231★ and 67.236★. This requirement may be fulfilled by credit for OAC Biology, Biology 61.103★ and 61.104★ or by arrangement with the instructor for extra reading assignments in Geology 67.231★.

A three-year program for students not intending to become professional geologists is also available. Requirements are the same as for the B.Sc. program outlined above except that Geology 67.282★ is not mandatory, no courses above the 300 series are required, and the total credits will number 15.0, including 7.0 Geology credits; at least 5.0 Science credits outside of Geology, which



must include Mathematics 69.107★ and 69.117★, Chemistry 65.100 and 1.0 credit from Biology 61.103★ and 61.104★ or Physics 75.101★ and 75.102★, or 75.107★ and 75.108★; 2.0 arts or social science credits and 1.0 optional credit.

A typical program is as follows:

#### First Year

Geology 67.100 (see Note);  
Chemistry 65.100;  
Physics 75.101★ and 75.102★, or 75.107★ and 75.108★, or Biology 61.103★ and 61.104★;  
Mathematics 69.107★, and 69.117★;  
1.0 credit (arts or social science).

**Note:** May be replaced by another Science credit if taken in Qualifying-University year.

#### Second Year

Geology 67.223★, 67.225★, 67.228★, 67.231★, 67.236★, 67.281★ and 67.282★;  
1.0 First-or Second-year Science credit;  
0.5 credit (arts or social science).

#### Third Year

Geology 67.321★, 67.323★, 67.324★, 67.325★, 67.385★ and 67.386★;  
1.0 Second-year Science credit;  
0.5 credit (arts or social science);  
0.5 credit (Arts, Social Sciences, Science or Engineering).

#### Fourth Year

3.0 Geology credits at the 400-level;  
1.0 200-level Science credit;  
1.0 credit (Arts, Social Sciences, Science or Engineering).

## Graduate Courses

For information on graduate courses, please consult the *Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Geology 67.100

#### Principles of Geology

This course is an exploration of essential geological principles and of fundamental questions regarding the Earth. What is the origin and history of the Earth, continents, and oceans? How did life originate and evolve? Are present geological processes the key to understanding the past?

Precludes additional credit for Geology 67.105.

**Prerequisite:** Enrollment in either Science or Engineering. Students in other programs may register with permission of the Department.

Lectures two hours a week, tutorial one hour a week, laboratory three hours a week, two field excursions.

### Geology 67.104★

#### The Evolving Earth

The 4.6 billion year history of plate tectonics, sea level change, and ancient climates. Current global patterns of terrestrial through deep ocean environments, catastrophic events, distribution of solid-earth resources, and impact on society. (Also listed as Science 60.201★).

Precludes additional credit for Geology 67.100, Geology 67.105/Geography 45.105, 60.201★ and 60.200.

**Prerequisite:** For non-science students only.

Lectures three hours a week.

### Geology 67.105

#### Introduction to Geoscience

Survey of processes operating within the Earth and at its surface: the hydrological cycle, oceans, Earth structure, tectonics, rocks, minerals, history of life on the Earth, climatic change, soils, land-forms and resources. (Also listed as Geography 45.105.)

Precludes additional credit for Geology 67.100.

Lecture three hours a week, laboratory three hours a week, a field excursion.

**Note:** Students wishing to continue in a Geology program may, with permission of the Department of Earth Sciences, substitute Geology 67.105 for Geology 67.100.

### Geology 67.201★

#### Co-operative Work Term Report 1

This course provides practical experience for students enrolled in the Co-operative Option. To receive course credit a student must receive satisfactory evaluations from their work term employer. Written and oral reports describing the work term project will be required.

**Prerequisites:** Registration in the Earth Sciences Co-operative Option and permission of the Department.

Four-month work term.

### Geology 67.223★

#### Optical Mineralogy

Methods of optical mineralogy and optics of the rock forming minerals.

Precludes additional credit for Geology 67.222★.

**Prerequisite:** Geology 67.100 or 67.105; Chemistry 65.100; or permission of the Department.

Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

### Geology 67.225★

#### Introductory Geochemistry

An introduction to thermodynamics, phase diagrams, and solution chemistry as applied to geological systems. Distribution of the elements.

Precludes Geology 67.221★.

**Prerequisite:** Geology 67.100 or 67.105, Chemistry 65.100; or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

### Geology 67.228★

#### Petrology and Geochemistry of Igneous Rocks

The classification of igneous rocks. The chemical characteristics of the crust and mantle. The generation and physical properties of magmas, magma emplacement of volcanic and plutonic rocks. Phase equilibrium and isotope geochemistry.

**Prerequisites:** Geology 67.223★ and 67.225★.

Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

### Geology 67.231★

#### Historical Geology and the Fossil Record

Evolution of the earth and its biosphere through geological time, the stratigraphic and fossil record in relationship to geological and paleontological processes, introduction to important fossil groups and their paleoenvironmental implications.

**Prerequisite:** Geology 67.100 or 67.105; or permission of the Department.

Lectures three hours a week and laboratory three hours a week. May involve one or more field trips.

### Geology 67.236★

#### Evolutionary Paleoecology

Principles of ecology and paleoecology applied to the stratigraphic succession of fossil communities. Current concepts of micro- and macro-evolution and extinction and the synthesis of key paleontological events through the Phanerozoic are emphasized.

Precludes additional credit for Geology 67.332★ and 67.333★.

**Prerequisite:** Geology 67.231★ or permission of the Department.

Lectures two hours a week, laboratory three hours a week.



**Geology 67.238 ★****Environmental and Resource Geology**

Enhances appreciation of the resource basis of society and addresses issues related to the extraction and utilization of geological resources. Deals with the role of the Earth Sciences in the forecasting and mitigation of natural disasters such as earthquakes and volcanic eruptions.

Available only as a free elective in the Geology programs.

Prerequisite: Geology 67.100 or 67.104★ or Geology 67.105/Geography 45.105, or Interdisciplinary Science 60.201★; or permission of the Department.

Lectures three hours a week.

**Geology 67.241 ★****Dinosaurs**

A general introduction to dinosaurs, their place in evolution, their social behaviour, the Mesozoic landscape, extinction theories, and public perception of dinosaurs.

Accepted as a free elective only in all Science programs.

Lectures three hours a week.

**Geology 67.242 ★****Climate Change: An Earth Sciences Perspective**

An exploration of the often dramatic climate changes that have occurred through earth history from a geological perspective, emphasizing the history of earth climates, geological causes of climate change, and impact that rapid climate change has had on the biosphere.

Accepted as a free elective only in all Science programs.

Lectures three hours a week.

**Geology 67.243 ★****Introduction to Oceanography**

An environmental approach to understanding the oceans which cover over 70 percent of the Earth's surface; deals with origins, physical and organic components and processes, geological marine resources and marine pollution.

Accepted as a free elective only in all Science programs.

Prerequisite: One of Geology 67.100, 67.104★, 67.105/Geography 45.105, Interdisciplinary Science 60.201★; or permission of the Department.

Lectures three hours per week.

**Geology 67.244 ★****Engineering Geology**

Overview of geological processes essential for understanding engineering problems. Topics include: geologic cycle; classification of rocks; stratigraphy; geological structures; physical and chemical weathering; erosion, transportation, and depositional environments; definition, classification and properties of soils; physical and geochemical aspects of groundwater; and geophysical techniques.

Precludes additional credit for Geology 67.100, 67.104★ and 67.105.

Prerequisites: Registration in B.Eng; Chemistry 65.111★; or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks, a field excursion.

**Geology 67.281 ★****Field Geology I**

An introduction to the study of rocks from the Precambrian and Phanerozoic Eras. Geologic mapping techniques are emphasized. A mandatory two-week field camp before classes in the Fall with additional laboratories and field trips during the Fall term. Precludes Geology 67.285★ as a Science credit for students in Geology program but may be taken as a Free Elective.

Prerequisites: Geology 67.100 or Geology 67.105/Geography 45.105 and completion of First-year Science program; or permission of the Department.

**Geology 67.282 ★****Field Geology II**

An introduction to methods of field analysis and interpretation in deformed and metamorphosed terranes. The course includes a two-week field camp to be taken in early May.

Prerequisites: Geology 67.281★ and permission of the Department.

Lectures one hour a week, laboratory three hours a week, two-week field camp in early May.

**Geology 67.285 ★****Environmental Field Geology**

The geology of the environment studied in the field. The course includes exercises on topics such as hydrogeology, limnology and Pleistocene Geology. A mandatory two-week field camp before classes begin in the Fall.

Precludes Geology 67.281★ as a Science credit for students in the Geology programs but may be taken as a Free Elective.

Prerequisites: Geology 67.100 or Geology 67.105/Geography 45.105 and completion of the First-year Science program; or permission of the Department.

**Geology 67.301 ★****Co-operative Work Term Report 2**

This course provides practical experience for students enrolled in the Co-operative Option. To receive course credit a student must receive satisfactory evaluations from their work term employer. Written and oral reports describing the work term project will be required.

Prerequisites: Registration in the Earth Sciences Co-operative Option and permission of the Department.

Four-month work term.

**Geology 67.321 ★****Sedimentary Environments**

Principles of sediment transport, and classification of sedimentary rocks and structures, as applied to interpretation of sedimentary facies within the context of sequence stratigraphy.

Prerequisite: Geology 67.281★ or 67.285★; or permission of the Department.

Lectures two hours a week and laboratories three hours a week. May involve one or more field trips.

**Geology 67.323 ★****Petrology and Geochemistry of Metamorphic Rocks**

The classification of metamorphic rocks. The origin of metamorphic rocks with emphasis on the chemical and mineralogical characteristics of these rocks and the processes involved in their evolution. Related phase equilibria and thermodynamics.

Prerequisite: Geology 67.223★.

Lectures two hours a week, laboratory three hours a week, one day long field trip.

**Geology 67.324 ★****Mineral Deposits**

Metallic and non-metallic ore deposits, property valuation, mineral economics, exploration geochemistry, stable isotope and trace element geochemistry, partition coefficients.

Prerequisites: Geology 67.321★ and 67.323★; or permission of the Department.

Lectures two hours a week and laboratory three hours a week, one day long field trip.

**Geology 67.325 ★****Physical Hydrogeology**

An introduction to the principles governing the movement of groundwater through various geological materials. The exploration, development and use of groundwater as a resource by man, and groundwater-related geohazards are examined.

Precludes additional credit for Geology 67.424★.

Prerequisites: Geology 67.100 or 67.105/Geography 45.105; or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geology 67.385 ★****Geodynamics**

The structure, composition, and rheological properties of the Earth: lithosphere, mantle and core. Plate tectonics and its relation to geophysical fields, driving mechanisms, and processes at plate boundaries and in plate interiors.

Precludes additional credit for Geology 67.380 or 67.382★.

Prerequisites: Geology 67.228★; 67.281★ or 67.285★; and 67.282★; or permission of the Department.

Lectures two hours a week, laboratory three hours a week.



Geology 67.386★

### **Structural Geology**

Structure and tectonic evolution of mountain belts; analysis of strain and fabrics in a variety of crustal settings. Applications to geological engineering and mineral and petroleum exploration. Prerequisites: Geology 67.380 or 67.381★.

Prerequisites: Geology 67.385★ or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

Geology 67.401★

### **Co-operative Work Term Report 3**

This course provides practical experience for students enrolled in the Co-operative Option. To receive course credit a student must receive satisfactory evaluations from their work term employer. Written and oral reports describing the work term project will be required.

Prerequisites: Registration in the Earth Sciences Co-operative Option and permission of the Department.

Four-month work term.

Geology 67.403★

### **Directed Studies in Geology**

One or more projects involving at least 15 days field and/or laboratory research, not related to thesis research. Assessment based on written reports and an oral presentation. Expenses for long-distance travel are borne by the student.

Prerequisites: Honours standing and permission of the Department.

Hours to be arranged.

Geology 67.415★

### **Quaternary Geography**

Changes in the physical environment of the earth during the last 2 million years; methods of studying recent earth history; the last ice age in Canada. (Also listed as Geography 45.411★.)

Note: Geology 67.321★ and Geography 45.312★ are recommended.

Lectures three hours a week.

Geology 67.417★

### **Geotechnical Mechanics**

Soil composition and soil classification. Soil properties, compaction, seepage and permeability. Concepts of pore water pressure, capillary pressure and hydraulic head. Principle of effective stress, stress-deformation and strength characteristics of soils, consolidation, stress distribution with soils, and settlement. Laboratory testing. (Also listed as Engineering 82.328★, Geography 45.417★.)

Prerequisites: Geology 67.244★ or equivalent and Third-year registration, or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks.

Geology 67.422★

### **Metallic Mineral Deposits**

Ore deposits studied from their relationships to the petrologic cycle. Ore genesis interpreted in light of field studies of local deposits, reflected light microscopy of ore suites, description of classic deposits, phase equilibria and isotopic evidence.

Prerequisites: Geology 67.323★ and 67.324★.

Lectures, seminars and laboratories five hours a week.

Geology 67.423★

### **Petroleum Geology**

Principles and methods of petroleum exploration geology with emphasis on the Western Canada Sedimentary Basin.

Prerequisites: Geology 67.231★, 67.321★, 67.386★; or permission of the Department.

Lectures, seminars and laboratories five hours a week.

Geology 67.425★

### **Geochemistry of Waters**

The principles and processes controlling the chemical quality of groundwater and the subsequent effects on water quality due to human activities. Isotope geochemistry of the hydrologic cycle and dissolved constituents in groundwater.

Prerequisites: Geology 67.420★.

Prerequisites: Geology 67.325★ and Chemistry 65.100, or permission of the Department.

Geology 67.431★

### **Microfossils**

Oceanological and marine geological processes; microorganisms of the oceans; microfossils: their evolution, biostratigraphic and paleoecologic significance and economic use; microfossils correlation in petroleum geology. Laboratory: Examination and identification of microfossils. Each student is required to present at least one seminar paper.

Prerequisite: Geology 67.231★ or permission of the Department.

Lectures and laboratories five hours a week.

Geology 67.432★

### **Marine Geology**

Development of ocean basins, physical and chemical oceanographic processes, paleoceanographic changes of watermass distribution and circulation patterns, interaction between atmosphere and ocean, marine sedimentation, offshore seismic stratigraphy, marine habitats, marine instrumentation.

Prerequisites: Geology 67.231★, 67.321★; 67.385★; or permission of the Department.

Lectures, seminars and laboratories five hours a week.

Geology 67.435★

### **Carbonate Sedimentology**

Aspects of modern depositional systems, dynamic facies models, sequence stratigraphy, mineralogy, and diagenesis of carbonate sediments. Practical part of the course will introduce various techniques in carbonate sedimentology (mapping, petrography, staining, cathodoluminescence, fluorescence, SEM). A term paper is required.

Prerequisites: Geology 67.463★.

Prerequisites: Geology 67.321★ or permission of the Department.

Lectures two hours a week and a three-hour laboratory.

Geology 67.442★

### **Advanced Structure**

A study of the structural evolution of mountain belts, with emphasis on field methods.

Prerequisites: Geology 67.385★ and 67.386★; or permission of the Department.

Lectures, seminars and laboratories five hours a week.

Geology 67.451★

### **Igneous Petrology**

Genesis of plutonic and volcanic rocks, their spatial and petrochemical relationships and crust-mantle differentiation; associated problems in phase equilibria and isotopic studies. One day-long field trip.

Prerequisite: Geology 67.323★.

Lectures and laboratories five hours a week.

Geology 67.452★

### **Metamorphic Petrology**

Field relations of metamorphic rocks; graphical treatment and interpretation of mineral assemblages. Laboratory: Petrographic techniques, study of rock suites.

Prerequisite: Geology 67.323★.

Geology 67.464★

### **Precambrian Geology**

Introduction to problems of the Precambrian, emphasizing both classical and current North American studies. Laboratory: research methods, field trips, petrologic studies of representative rock suites.

Prerequisite: Geology 67.323★.

Geology 67.477★

### **Engineering Seismology**

Seismological topics with engineering applications. Characterization of seismicity and seismic sources (areas and faults). Seismic hazard analysis. Empirical and theoretical modeling of strong ground motion in time and frequency domains.

Prerequisites: Geology 67.385★ and 67.386★; or permission of the Department.

Lectures two hours a week.



**Geology 67.481 ★**

**Physics of the Earth**

The physical properties of the solid Earth. Gravitational, magnetic and palaeomagnetic fields; seismology and earthquake occurrence; heat flow and thermal history. Geodynamic processes.

Prerequisites: Geology 67.385★ and 67.386★; or permission of the Department.

**Geology 67.482 ★**

**Geochemistry and Isotope Geology**

Chemical evolution of the Earth, meteorites, development of the continental crust, origin of the atmosphere and hydrosphere, radiometric dating, stable isotopes, origin of life.

Prerequisites: Geology 67.323★ and 67.324★; or permission of the Department.

Lectures and seminars five hours a week.

**Geology 67.483 ★**

**Applied Geochemistry**

Chemical and physical factors responsible for the distribution and migration of the elements in the lithosphere, hydrosphere, atmosphere and biosphere; geochemistry applied to mineral exploration; methods of analysis. Laboratory: determination of trace amounts of the common metallic elements in soils and stream sediments; case histories, research problems, field trips.

Prerequisites: Geology 67.228★, 67.324★, Chemistry 65.100; or permission of the Department.

**Geology 67.484 ★**

**Exploration Geophysics**

An introduction to the fundamental theory and application of geophysics to economic and structural geology. Methods studied are

electrical, gravitational, magnetic, radioactive and seismic. Case history studies integrate the application of the methods.

Prerequisites: Geology 67.385★ and 67.386★, Physics 75.101★ and 75.102★, or 75.107 and 75.108★; or permission of the Department.

Lectures and problems three hours a week.

**Geology 67.485 ★**

**Data Integration and Analysis in the Geosciences**

Integration and analysis of spatial data in a Geographical Information System environment. Topics include acquisition, representation, analysis, and modelling of geological, geophysical, geochemical, and remotely-sensed data.

Prerequisites: Completion of the Second-Year Geology course requirements in Earth Sciences, or permission of the Department.

Lectures and laboratory five hours a week.

**Geology 67.487 ★**

**Field Geology III**

Two-week field camp designed to extend the student's geological knowledge by integrating advanced field, theory and experimental data. Assessment based on written reports, seminars, and oral examinations. Part of the cost is borne by the student.

Prerequisites: Completion of the Third-year Geology course requirements and permission of the Department.

**Geology 67.498**

**Honours Thesis**

Independent studies. Requires prior written approval of a topic from a supervisor and the course co-ordinator. Oral and written proposal, progress and defence reports are required.

Prerequisite: Completion of the Third-Year Geology course requirements.

# Economics

## (Arts and Social Sciences)

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C874 Loeb Building  
Telephone: 520-3744

### Academic Administration

**Chair,** P.N. Rowe

**Supervisors of Graduate Studies, M.A. Studies** S.B. Park,  
**Ph.D. Studies,** R.A. Brecher

**Director of Doctoral Studies, Joint Ph.D Program**  
with the University of Ottawa, Rose Anne Devlin

**Supervisor of B.A. (Honours) Studies,** J.C. McManus

**Supervisor of B.A. Studies,** E.G. Davis

### Teaching Staff

**Professor Emeritus**

**E.G. West,** M.Sc., Ph.D. (London)

**Professors**

**A.L. Keith Acheson,** B.A., Ph.D. (Toronto) • **Jeffrey I. Bernstein,** B.A. (Sir George Williams), M.A., Ph.D. (Western Ontario) • **Richard Alan Brecher,** B.A. (McGill), M.A., Ph.D. (Harvard) • **Richard Lee Carson,** M.A. (Minnesota), Ph.D. (Indiana) • **E.U. Choudhri,** M.A. (Panjab), Ph.D. (Chicago) • **Keith A.J. Hay,** B.Sc. (Southampton), M.Sc. (Toronto) • **Kanta Marwah,** M.A. (Punjab), Ph.D. (Pennsylvania) • **Donald G. McFetridge,** B.Com. (Saskatchewan), M.A. (Toronto), M.Sc. (London School of Economics), Ph.D. (Toronto) • **Soo Bin Park,** M.Eco. (Seoul), M.A., Ph.D. (Indiana) • **Archibald R.M. Ritter,** B.A. (Queen's), M.A. (Western Ontario), Ph.D. (Texas) • **Douglas A. Smith,** B.Com., M.A. (Toronto), Ph.D. (Massachusetts Institute of Technology)

**Associate Professors**

**Zhiqi Chen,** B.A. (Nanjing), M.A. (Carleton), Ph.D. (Western Ontario) • **Eric G. Davis,** B.Sc. (Queen's), Ph.D. (Brown) • **Fanny Demers,** B.A. (Bogazici), M.B.A. (McGill), M.A., Ph.D. (Johns Hopkins) • **Michel Demers,** B.A., M.A. (McGill), M.A., Ph.D. (Johns Hopkins) • **Brian Erard,** B.A. (Notre Dame), M.A., Ph.D. (Michigan) • **J.S. Ferris,** B.Com., M.A. (Toronto), Ph.D. (California) • **John C. McManus,** B.A., M.A. (Western Ontario), Ph.D. (Toronto) • **Simon Power,** B.A. (Durham), M.A. (London), M.A. (Saskatchewan), Ph.D. (Western Ontario) • **P. Nicholas Rowe,** B.A. (Stirling), M.A., Ph.D. (Western Ontario) • **Huntley Schaller,** B.A. (McGill), Ph.D. (Massachusetts Institute of Technology) • **Lawrence L. Schembri,** B.Com. (Toronto), M.Sc. (London), Ph.D. (Massachusetts Institute of Technology) • **Alleen Thompson,** B.A. (Smith College), Ph.D. (Michigan)

**Assistant Professors**

**Kelr Armstrong,** B.A. (Toronto), Ph.D. (British Columbia) • **Frances Woolley,** B.A. (Simon Fraser), M.A. (Queen's), Ph.D. (London School of Economics)

**Distinguished Research Professors**

**C.J. Maule** • **Carl H. McMillan, Jr.** • **T.K. Rymes**

**Adjunct Research Professors**

**J. Baldwin** • **H.E. English** • **J.A. Galbraith**

**Adjunct Professors**

**Caswell L. Johnson** • **R.F. Neill**

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### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth requirements (see p. 72), and all Major regulations and requirements as set out below.

### Mathematics Requirements

Students intending to pursue courses in Economics beyond the introductory level are required to take Mathematics 69.007★ if they lack an OAC in Calculus, and 69.017★ if they lack an OAC in Algebra and Geometry.



## Honours Programs

The Honours programs may be entered in First year or by transfer from the B.A. programs if minimum Honours standing has been obtained. The student's program for the Second and subsequent years must be planned in consultation with the Supervisor of Honours Studies of the Department.

### Honours in Economics

The requirement for an Honours degree is a minimum of 20.0 credits with at least 9.0 credits in Economics and 1.0 credit in Mathematics. The Honours requirements include: Mathematics 69.109★ and 69.119★ or equivalent; Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.476★, 43.490, plus 2.0 additional credits in Economics at the 400-level.

An Honours Essay (Economics 43.498) with a grade of *B-* or better may be written to earn 1.0 credit at the 400-level, and can replace the Economics 43.490 requirement. Students who choose to do the Honours Essay must have a detailed outline of the Essay approved by their adviser and by the Honours Supervisor before the last day for withdrawal from full-credit courses. In the absence of such an approved outline, the Department may require the student to withdraw from the Honours Essay.

For students graduating in the Honours program in Economics, the overall graduation average shall be calculated over all successfully completed, graded courses used to meet the degree requirements. The graduation average in Economics shall be calculated over all successfully completed, graded required Economics courses counting towards the degree. Where more than the required minimum of non-specified Economics courses has been taken, the courses with the highest grades shall be used in the calculation of the graduation average.

### Minor in Economics

Students may obtain a "Minor in Economics" designation on their transcript and diploma by completing the 4.0 credits specified below, with a GPA of 4.0 or better in Economics.

#### *Required Courses (2.0 credits)*

43.100 or First-Year Seminar 01.103, 43.201★ or 43.202★, 43.211★ or 43.212★.

2.0 additional credits in Economics beyond the 100-level.

(Of these 4.0 credits, 2.0 must be taken at Carleton University)

### Normal Course Pattern in Honours Economics

*First Year:* Economics 43.100 or First-Year Seminar 01.103, Mathematics 69.109★ and 69.119★.

*Second Year:* Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★.

(Students should note that: an average grade of *C+* or better in 43.202★ and 43.203★ is required to take 43.420★; an average grade of *C+* or better in 43.212★ and 43.213★ is required to take 43.421★; a grade of *C+* or better in 43.220 is required to take 43.476★.)

*Third Year:* Economics 43.420★ and 43.421★, 43.476★, 0.5 additional Economics credit at the 400-level.

*Fourth Year:* Economics 43.490, 1.5 Economics credits at the 400-level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

## B.A. (Honours) with a Concentration in Financial Economics

*Core Economics courses for this concentration are:*

Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.476★, 43.490 or 43.498.

*Required Concentration Courses:*

42.101★, 42.102★, 43.254★ (42.254★), 43.255★ (42.255★), 43.350★ (42.350★), 43.351★ (42.351★), 43.408★ (42.450★), 43.411★ (42.452★).

### Normal Course Pattern for the B.A. (Honours) with a Concentration in Financial Economics:

*First Year:* Economics 43.100 or First-Year Seminar 01.103; Business 42.101★ and 42.102★; Mathematics 69.109★ and 69.119★; 2.0 credits options

*Second Year:* Economics 43.202★ and 43.203★, 43.212★ and 43.213★, 43.220, 43.240★, 43.254★ (42.254★), 43.255★ (42.255★), 0.5 credit option

*Third Year:* Economics 43.420★ and 43.421★, 43.476★, 43.350★ (42.350★), 43.351★ (42.351★), 2.5 credits options

*Fourth Year:* Economics 43.490/43.498, 43.408★ (42.450★), 43.411★ (42.452★), 3.0 credits options

The minimum GPA required in the courses in this concentration is 6.5. The concentration in Financial Economics is available to students in the B.A. program. However, it is unlikely that a student could meet the requirements of the concentration within the 15.0 credits required for the B.A. degree.

### Combined Honours

Students may apply for Combined Honours in Economics and another discipline. Students should consult the Supervisor of Honours Studies.

Students in the Combined Honours program are normally required to take 1.0 credit in Mathematics and at least 7.0 credits in Economics, of which 2.5 credits are at the 400-level. The requirements are: Mathematics 69.109★ and 69.119★ or equivalent; Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.490, and an additional 0.5 credit at the 400-level. The Honours Essay (Economics 43.498) with a weight of 1.0 credit, requiring a grade of *B-* or better, may be written in Economics and can replace the Economics 43.490 requirement.

The minimum of 20.0 credits and the procedure for computing final standing described above apply to the Combined Honours program.

The Combined Honours programs in four related fields are described in greater detail below.

### Normal Course Pattern in Combined Honours in Economics

*First Year:* Economics 43.100 or First-Year Seminar 01.103; Mathematics 69.109★ and 69.119★.

*Second Year:* Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220 (or recognized equivalent), 43.240★.

*Third Year:* Economics 43.420★ and 43.421★.

*Fourth Year:* Economics 43.490 and 1.0 additional 0.5 credit in Economics at the 400-level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.



## Combined Honours in Economics and Political Science

The program requires 1.0 credit in Mathematics (69.109★ and 69.119★), 7.0 credits in Economics and 6.0 credits in Political Science. The Economics requirements include:

Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, 43.240★, 43.420★, 43.421★, 43.490 and 0.5 credit at the 400 level.

## Combined Honours in Economics and Journalism

Students in this program are required to complete a total of 20.0 credits (20.5 credits if admitted prior to 1995-96) and may choose to graduate with either a B.A. (Honours) or B.J. (Honours). The Economics requirements are Mathematics 69.109★ and 69.119★, Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.490; 1.0 approved credit in Economic History and 0.5 credit option in Economics at the 400-level. The Journalism requirements are: a language course, preferably French, (acceptable 100-level French courses are one of French 20.120, 20.130, 20.140 or 20.150), Journalism 28.100, 28.221, 28.225★, 28.251★, 28.400, 28.421, and two of 28.425★, 28.426★, 28.427★, 28.428★.

## Combined Honours in Economics and Sociology

The Economics requirements are: Mathematics 69.109★ and 69.119★, Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, 43.220 (or Sociology 53.370), 43.240★, 43.420★, 43.421★, 43.490 and a 0.5 credit at the 400-level.

See also p. 410 and consult the Department of Sociology and Anthropology.

## B.A. Programs

### B.A. Program in Economics

The requirements are: Mathematics 69.109★ and 69.119★ and at least 6.0 credits in Economics: Economics 43.100, or First-Year Seminar 01.103; 43.202★, 43.203★, 43.212★, 43.213★, 43.220, and 2.0 other credits in Economics. Students are normally permitted to major in Economics only if they have obtained a grade of C- or better in Economics 43.100 or First-Year Seminar 01.103.

A B.A. student must maintain a GPA of 4.0 or better to remain in the program. For purposes of determining a B.A. student's average at graduation, only the 6.0 required credits in Economics (i.e. excluding 69.109★ and 69.119★) will be considered.

### Combined B.A. Program

Students in Combined B.A. programs will complete Mathematics 69.109★ and 69.119★ and 5.0 credits in Economics: Economics 43.100 or First-Year Seminar 01.103, 43.202★, 43.203★, 43.212★, 43.213★, and 2.0 other credits in Economics. Students in the Combined B.A. program must maintain a GPA of 4.0 or better to remain in the program.

## Graduate Program

The Department of Economics offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the *Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

First-Year Seminar in Economics 01.103

### Introduction to Economics

See course description on p. 84.

Economics 43.100

### Introduction to Economics

An introduction to the major tools and policy problems of economics. Economic analysis is applied to a variety of contemporary problems such as pollution, poverty, the control of monopoly, unemployment, inflation and international economic problems.

Precludes additional credit for First-Year Seminar 01.103.

Lectures three hours a week and discussion group one hour every two weeks.

Economics 43.201★

### Intermediate Microeconomics for Non-Majors

The main topics in microeconomic theory with illustrations of their applications. Not open to students in Economics or the Bachelor of Commerce program.

Precludes additional credit for Economics 43.202★ or 43.203★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, or permission of the Department.

Lectures three hours a week.

Economics 43.202★

### Intermediate Microeconomics I

An analysis of consumer demand, production, costs and an introduction to market structures, with special reference to the determination of conditions which maximize social welfare.

Precludes additional credit for Economics 43.201★.

Prerequisites: Economics 43.100 or First-Year Seminar 01.103, (grade of C- or better); and Mathematics 69.109★, which may be taken concurrently with Economics 43.202★.

Lectures three hours a week.

Economics 43.203★

### Intermediate Microeconomics II

An analysis of distribution, market structures and general equilibrium theory, with special reference to the determination of conditions that maximize social welfare.

Precludes additional credit for Economics 43.201★.

Prerequisite: Economics 43.202★.

Lectures three hours a week.

Economics 43.211★

### Intermediate Macroeconomics for Non-Majors

The main topics in macroeconomic theory with illustrations of their application. Not open to students in Economics or the Bachelor of Commerce program.

Precludes additional credit for Economics 43.212★ or 43.213★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, or permission of the Department.

Lectures three hours a week.

Economics 43.212★

### Intermediate Macroeconomics I

An examination of the standard macroeconomic model of a closed economy, emphasizing both the aggregate demand and the aggregate supply side of the economy. The model is used to analyze basic macroeconomic problems and evaluate proposed solutions of these problems.

Precludes additional credit for Economics 43.211★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, (grade of C- or better); and Mathematics 69.109★, which may be taken concurrently with Economics 43.212★.

Lectures three hours a week.

Economics 43.213★

### Intermediate Macroeconomics II

An extension of the standard macroeconomic model to include topics such as macroeconomic theory and policy in an open economy, theoretical development and empirical analysis of basic macro relationships, the short-run dynamics of wage-price adjustment and economic growth.

Precludes additional credit for Economics 43.211★.

Prerequisite: Economics 43.212★.

Lectures three hours a week.



**Economics 43.220****Statistical Methods in the Social Sciences**

An introduction to statistical inference. Topics covered include probability theory, estimation, sampling distributions, two-population inference, tests of goodness of fit and independence, correlation, simple and multiple linear regression with residual analysis, and analysis of variance.

Precludes additional credit for Geography 45.206★, Mathematics 69.257★, 69.259★, 69.266★, 69.267★, Psychology 49.300, and Sociology 53.370.

Prerequisites: Mathematics 69.109★ and 69.119★ (or equivalent); or permission of the Department. These courses may be taken concurrently with Economics 43.220. For students in the Bachelor of International Business program, the prerequisite is successful completion of Business 42.173.

Lectures three hours a week, tutorials one hour a week.

**Economics 43.235****Canadian Economic History**

A historical survey of persistence and change in the Canadian economy from the eighteenth to the twentieth centuries. (Also listed as History 24.235.)

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, or permission of the Department.

**Economics 43.240★****Economic Applications of Mathematics**

Optimization, with and without constraints, and comparative static methods applied to models such as utility maximization and least cost production; homogenous functions; compounding and exponential functions; economic models involving integration; the use of matrix algebra and differential equations.

Prerequisites: Economics 43.100 or First-Year Seminar 01.103, and Mathematics 69.109★ and 69.119★. Enrolment in this course is limited to students whose major is Economics or Business.

Lectures three hours a week.

**Economics 43.254★****Essentials of Business Finance**

Business firms' financing, capital investment, and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Business 42.254★.)

Precludes additional credit for Economics 43.250★.

Prerequisites: Business 42.104★ and Business 42.105★ (or 42.101★ and 42.102★) with grade of C- or better in each. For students in the Bachelor of International Business or in the Management Concentration in Civil and Environmental Engineering: Business 42.270★ (with a grade of C- or better).

Lectures three hours a week.

**Economics 43.255★****Business Finance**

Capital investment and financing decisions in the context of risk and return tradeoffs. Primary and derivative securities, and their role in risk management. Topics include mergers, corporate restructuring, the theory of principal-agent relationships, and financial planning, forecasting, and control. (Also listed as Business 42.255★.)

Precludes additional credit for Economics 43.250★.

Prerequisites: Economics 43.254★, Economics 43.100 or First-Year Seminar 01.103, Mathematics 69.109★ (or its equivalent) and 69.119★ (or its equivalent). For students in the Bachelor of International Business program the Mathematics courses can be replaced by Business 42.173. For students in the Management Concentration in Engineering, Economics 43.100 can be replaced by Civil and Environmental Engineering 91.380★.

Lectures three hours a week.

**Economics 43.305★****Selected Topics in Economic History**

Examination of the economic development of North America or Europe or other possible selected sets of countries. Countries examined vary from year to year.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, or permission of the Department.

**Economics 43.320★****Economics of Information and the Media**

An introduction to the economics of information and the media, with a focus on the analysis of production and distribution of information, the application of theory to selected communications-media industries in Canada, and the analysis of existing Canadian policies.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

**Economics 43.324★****An Economic Analysis of Law**

An introduction to the application of economic principles and methodology to a variety of legal problems with particular emphasis on the theory of property rights and the allocation of resources.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

**Economics 43.325****The Economic Development of Canada**

A general survey of Canadian economic development from 1534 to 1970.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, or permission of the Department.

**Economics 43.326★****Economic Theories of Federalism**

Economic dimensions of federalism, with reference to Canadian experience. Issues include: fiscal federalism; impact of federal economic policies on provincial economies, decentralization possibilities for fiscal and economic development policies, consequences of policies such as provincial trade barriers and impediments to factor flows.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

**Economics 43.330★****Public Policy Toward Business**

The interaction of government and business in the Canadian economy. Reasons for government involvement in selected public policy areas. Topics covered may include competition policy, regulation of firms by boards and commissions, environmental regulation and public enterprise.

Precludes additional credit for Economics 43.431★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.335****Political Economy in the Modern State**

An examination of the role of government in the economy, with special emphasis on alternate forms of social co-ordination and the advantages and disadvantages of each form in the Canadian system.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures two hours a week.

**Economics 43.341★****Regional Economics**

Unequal distribution of economic activity between spatially defined regions. The pattern in Canada since World War II, and the outlook for the future is evaluated, considering "natural" adjustment mechanisms, and policy tools.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.342★****Special Studies in Economics**

Content of this course varies year by year, topics to be determined by the instructor invited to offer the course.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.344★****Economic Thought and Policy in Canada**

An account of the interrelationship between economic theories expounded in Canada and their issue in national policy.

Prerequisite: An introductory course in one of the social sciences or Canadian history.



**Economics 43.346★****Agricultural Economics**

An examination of the agricultural industry in the national economy and in low-income societies. The course emphasizes the working out of the basic forces that determine supply-demand for the industry and the functional distribution of income among the factors of production. The place of institutions is examined and public policy is critically reviewed.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

**Economics 43.347★****Public Finance: Taxation**

The role and nature of the government sector in the economy, the principles of taxation, tax equity, the incidence and excess burden of taxes, the structure of taxes in the Canadian economy, the role of personal, corporate, sales and wealth taxes in the economy, fiscal stabilization policy, and the economics of public debt. Precludes additional credit for Economics 43.303★ and 43.441★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.348★****Public Finance: Expenditure**

The role and nature of the government sector in the economy, the theory of public goods, the equity and efficiency effects of public expenditures, voting rules and fiscal politics, techniques of public expenditure analysis, and intergovernmental fiscal relations.

Precludes additional credit for Economics 43.303★ and 43.442★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.350★****Corporate Finance**

An examination of the major issues in corporate finance and applied financial management. Topics include: introduction to portfolio theory, the capital asset pricing model, cost of capital, capital structure and dividend policy, lease financing, capital budgeting under uncertainty, mergers and consolidations. (Also listed as Business 42.350★.)

Prerequisites: Economics 43.202★, 43.250★ or 43.255★, and 43.220 or Mathematics 69.267★.

Lectures three hours a week.

**Economics 43.351★****Principles of Investments**

Procedures and methods of investment analysis. The stock and bond markets. Government regulation of securities markets. Valuation of common stocks and fixed income securities. Options, warrants, convertibles and commodities. (Also listed as Business 42.352★.)

Prerequisites: Economics 43.250★ or 43.255★, and Economics 43.220 or Mathematics 69.267★.

Lectures three hours a week.

**Economics 43.356★****Introduction to Labour Economics**

Basic principles of labour economics including market, institutional and sociological forces. Issues such as technology and labour demand, wage systems, human capital, internal wage structure, market discrimination, female labour-force entry, wage/price spiral, household labour supply, wage determination are considered.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.357★****Introduction to Industrial Relations**

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Business 42.317★.)

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.360★****Topics in International Economics**

Possible topics include theory and policy in international trade, finance, investment and development. Intended for students plan-

ning to take only one half credit in international economics at the 300-level.

Precludes additional credit for Economics 43.361★, 43.362★, 43.461★, and 43.462★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103, or permission of the Department.

Lectures three hours a week.

**Economics 43.361★****Introduction to International Trade**

An extension of the basic principles of economics to international trade. Topics covered include the theory of international specialization, tariffs and other barriers to trade, trade liberalization and economic integration, international movements of labour and capital, trade and development.

Precludes additional credit for Economics 43.360★ and 43.461★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.362★****International Monetary Problems**

A discussion of the theory and institutions of the international monetary system, and the related balance of payments problems of nation states.

Precludes additional credit for Economics 43.360★ and 43.462★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.363★****Introduction to Economic Development**

A discussion of the principles of economic development. Application to the problems of the developing countries.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.367★****Monetary and Financial Institutions**

This course examines the behaviour of financial intermediaries and institutions, such as the Bank of Canada, banks and trust companies, and regulatory bodies such as the Canada Deposit Insurance Corporation and the Superintendent of Financial Institutions.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.370★****The Economics of Transition**

The transition from state ownership and central planning to mixed ownership structure with resource allocation by market mechanisms. "Classical socialism" is criticized and the processes of transition in countries of Central and Eastern Europe, the former Soviet Union and Asia are compared.

Precludes additional credit for Economics 43.371★ and 43.372★.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.

**Economics 43.380★****Topics in Canadian Economic Policy**

Economic analysis applied to selected policy areas, issues or institutions. One or more of the following topics may be dealt with: decision-making by bureaucratic institutions, policy problems arising from poverty, the economics of natural resources and pollution, urban economics.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

**Economics 43.385★****The Economics of Natural Resources**

This course is concerned with the application of economic analysis to questions concerning natural-resource use, management and conservation, as well as market failures and environmental effects. Policy problems relating to natural resources are discussed.

Prerequisite: Economics 43.100 or First-Year Seminar 01.103.

Lectures three hours a week.



**Economics 43.386★****Environmental Economics**

Microeconomic analysis of environmental issues. Frameworks for measuring environmental costs and benefits. The efficiency of alternative pollution control policies. Applications include air and water pollution and global environmental problems such as ozone depletion and global warming.

Prerequisites: Economics 43.100 or First-Year Seminar 01.103, or Engineering 91.380★.

Lectures three hours a week.

**Economics 43.404★****Operations Research I**

Linear programming, duality, sensitivity analysis, transportation and network problems. Both theory and a wide range of applications are studied.

Precludes additional credit for Business 42.230★ and Mathematics 69.381★.

Prerequisites: Mathematics 69.109★ and 69.119★ (grade of C- or better in each course).

Lectures three hours a week.

**Economics 43.405★****Operations Research II**

Dynamic programming, inventory models, queuing, simulation, non-linear programming. (Also listed as Business 42.435★.)

Prerequisites: Economics 43.404★, or Business 42.230★, or Mathematics 69.381★, and Economics 43.220 (grade of C- or better) or Mathematics 69.267★ (grade of C- or better).

Lectures three hours a week.

**Economics 43.406★****Economics of Uncertainty and Information**

Uncertainty, imperfect information and asymmetric information in the allocation of resources and the performance of markets and alternative co-ordinating mechanisms.

Prerequisites: Economics 43.220 or Mathematics 69.266★ and 69.267★, and Economics 43.202★, with a GPA of 4.0 or better on these prerequisites.

**Economics 43.407★****Statistical Decision Theory**

Bayesian and classical approaches to decision-making under uncertainty for individuals and firms.

Precludes additional credit for Business 42.436★.

Prerequisite: Economics 43.220 or Mathematics 69.266★ and 69.267★ (grade of C- or better).

**Economics 43.408★****Advanced Corporate Finance**

An in-depth examination of some of the major theoretical issues in corporate finance. This course requires analyses and presentations of both articles from the finance literature and case studies. (Also listed as Business 42.450★.)

Prerequisite: Economics 43.350★ (grade of C- or better).

Lectures three hours a week.

**Economics 43.410★****Finance and Capital Markets**

Analysis of Canada's financial markets with reference to differing classes of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public; impact of these institutions on corporate financial policy and access to foreign capital markets. (Also listed as Business 42.453★.)

Prerequisites: Economics 43.202★, 43.203★, 43.212★, and 43.220 or Mathematics 69.267★ (a grade of C- or better is required in each course.)

Lectures and seminars three hours a week.

**Economics 43.411★****Investment Management**

Analysis of investment requirements for individuals and institutional investors: liquidity, risk and return; portfolio design, construction, management and control; performance measurement; capital market theory. (Also listed as Business 42.452★.)

Prerequisite: Economics 43.351★ (grade of C- or better).

Lectures three hours a week.

**Economics 43.415****History of Economic Thought**

The crucial achievements in economic theory and doctrine in the nineteenth and twentieth centuries are studied. Special emphasis is given to the interrelationship between the social environment and economic thought, especially to the role of economics in the development of the national state and international institutions. Also offered at the graduate level, with additional or different requirements, as Economics 43.521 and 43.522, for which additional credit is precluded.

Prerequisite: Economics 43.202★, 43.203★, 43.212★ and 43.213★, (with an average grade of C- or better), or permission of the Department.

Lectures and seminars three hours a week.

**Economics 43.420★****Microeconomic Theory**

Theory of individual economic behaviour, theory of exchange and production, general equilibrium, alternative theories of pricing, allocation and distribution. Elementary tools of mathematics are employed in the exposition of most topics.

Prerequisites: Economics 43.202★ and 43.203★, with an average grade of C+ or better, 43.240★ (with a grade of C- or better) and 43.220 (43.220 may be taken concurrently with 43.420★).

This course is required for students in the Honours program in Economics.

Lectures three hours a week.

**Economics 43.421★****Macroeconomic Theory**

Major controversies in macroeconomic theory. Topics such as: determination of national income, employment, price level and interest rates; commodity, labour and asset markets; fiscal and monetary stabilization policy.

Prerequisites: Economics 43.212★ and 43.213★, with an average grade of C+ or better, 43.240★ (with a grade of C- or better) and 43.220 (43.220 may be taken concurrently with 43.421★).

This course is required for students in the Honours program in Economics.

Lectures three hours a week.

**Economics 43.426★****Topics in North American Economic History**

An examination of methodology applicable to the analysis of economic history. Intensive examination of selected topics in North American economic history.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, (with an average grade of C- or better on these prerequisites), or permission of the Department.

**Economics 43.427★****Topics in European Economic History**

An examination of methodology applicable to the analysis of economic history. Intensive examination of selected topics in European economic history.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, (with an average grade of C- or better on these prerequisites), or permission of the Department.

**Economics 43.431★****Industrial Organization I - Theory and Evidence**

An examination of various theoretical and empirical studies of firm and market organization with emphasis on the pricing, advertising, investment and locational behaviour of firms in imperfectly competitive markets.

Precludes additional credit for Economics 43.330★, and 43.430.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★ (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

**Economics 43.432★****Industrial Organization II - Policy and Applications**

This course extends the theoretical material developed in Economics 43.431★ and applies it to examine public policies toward business in Canada and in other market economies with emphasis on policies relating to regulation, competition, and innovation.



Precludes additional credit for Economics 43.430.

Prerequisite: Economics 43.431 ★.

Lectures three hours a week.

#### Economics 43.436★

##### **Employment Economics and Labour Policy**

A discussion of selected topics in labour economics with emphasis on the North American economy. Price theory is applied to the labour market. Emphasis is placed upon public policies that affect labour market performance. Topics of current interest are examined in light of recent research findings.

Precludes additional credit for Economics 43.435.

Prerequisites: Economics 43.202★ or Economics 43.201★ (with a grade of C- or better), or permission of the Department.

Lectures three hours a week.

#### Economics 43.439★

##### **Applied Industrial Economics**

This course examines the empirical application of microeconomics, with special emphasis on the Canadian economy. Topics include: consumer demand, firm production and investment, and industrial and trade structure.

Prerequisites: Economics 43.202★, 43.203★, and 43.220, (with a grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.441★

##### **Public Sector Economics: Taxation**

A discussion of the theory of taxation and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as the redistribution of income in Canada and tax reform are examined.

Precludes additional credit for Economics 43.347★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.442★

##### **Public Sector Economics: Expenditures**

A discussion of the theory of government expenditures and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as expenditures and grants in the Canadian federalism are examined.

Precludes additional credit for Economics 43.348★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.445★

##### **Welfare Economics**

An examination of contemporary welfare economics and its applications. Also offered at the graduate level, with additional or different requirements, as Economics 43.545, for which additional credit is precluded.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, (with an average grade of C- or better on these prerequisites).

#### Economics 43.446★

##### **Economic Dynamics: Growth**

An examination of modern steady equilibrium economic growth encompassing neoclassical, neo-Keynesian and neo-Ricardian theories of growth and accumulation. The theories of money and capital (and controversies) are examined in a growth context. Some discussion of optimum saving and accumulation is also included. Also offered at the graduate level, with additional or different requirements, as Economics 43.552, for which additional credit is precluded.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, (with an average grade of C- or better on these prerequisites).

Lectures and seminars three hours a week.

#### Economics 43.451★

##### **Economic Dynamics: Business Cycles**

An analysis of the nature and causes of fluctuations in income, prices and employment. A review of theories of short-run economic dynamics, with particular references to how expectations are formed. Some consideration is given to countercyclical gov-

ernment policies. Also offered at the graduate level, with additional or different requirements, as Economics 43.551, for which additional credit is precluded.

Prerequisites: Economics 43.212★ and 43.213★, (with an average grade of C- or better on these prerequisites).

#### Economics 43.457★

##### **The Economics of Development**

An examination of some theoretical approaches to the economics of development, together with analysis of some economic policy issues of a largely internal character, such as intersectoral investment allocation, income distribution, unemployment, and investment in human development.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.458★

##### **International Aspects of Economic Development**

An analysis of the international economic policy problems of development in Asia, Africa and Latin America, focusing on international trade, direct foreign investment, technological transfer, regional integration, debt and development financing, and international migration.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.461★

##### **International Trade Theory and Policy**

International trade theory and its implications for economic policy. Topics such as determinants of trade and specialization, gains from trade and commercial policy, international factor mobility, growth and development.

Precludes additional credit for Economics 43.360★ and 43.361★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.462★

##### **International Monetary Theory and Policy**

International monetary theory and its implications for economic policy. Topics such as sources of disequilibrium and adjustment in the balance of payments under fixed versus flexible exchange rates, international capital movements, and international monetary reform.

Precludes additional credit for Economics 43.360★ and 43.362★.

Prerequisites: Economics 43.212★ and 43.213★, or 43.211★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.

#### Economics 43.465★

##### **Industrial Relations**

Economic analysis of selected industrial relations and labour market policy problems. Topics include unionization, strike activity, the economics of occupational health and safety, pension policy, and the impact of new technology on the labour market.

Precludes additional credit for Economics 43.465.

Prerequisites: Economics 43.201★ or 43.202★ (with a grade of C- or better); or permission of the Department.

Lectures three hours a week.

#### Economics 43.467★

##### **Monetary Theory I**

The foundations of monetary theory. Topics include classical, Keynesian and other money transmission mechanisms; the "optimum quantity of money," estimates of supply and demand; difficulties of policy implementation in open and closed economies and in a growth context.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, (with an average grade of C- or better on these prerequisites).

Lectures three hours a week.



**Economics 43.468★****Monetary Theory II**

A continuation of Economics 43.467★. This course analyzes in depth some past and current controversies in monetary theory particularly as they relate to policy issues.

Prerequisite: Economics 43.467★.

Lectures three hours a week.

**Economics 43.471★****National Accounting**

Introduction to modern social accounting, including national income and expenditure accounts, input-output accounts, financial flow and national balance sheet accounts. Canadian practice concerning national wealth accounts, price and quantity indices and productivity measures, and the effects of inflation on national accounts.

Prerequisites: Economics 43.202★, 43.203★, and 43.212★, (with an average grade of C- or better on these prerequisites).

**Economics 43.476★****Econometrics I**

An introduction to econometric theory and analysis of the classical normal regression model. Topics include estimation methods, hypothesis testing, multicollinearity, autocorrelation, and heteroscedasticity.

Precludes additional credit for Economics 43.485, 43.482★, Mathematics 69.353★ and 70.355★.

Prerequisite: Economics 43.220 or equivalent, (with a grade of C+ or better).

Lectures three hours a week.

**Economics 43.477★****Econometrics II**

An extension of Economics 43.476★, Econometrics I. Topics include dummy variables, qualitative and limited dependent variables, and simultaneous equation models. Optional topic include simple expectations models, errors in variables, specification tests and diagnostics checks, distributed lag models, and seemingly unrelated regression models.

Precludes additional credit for Economics 43.485.

Prerequisite: Economics 43.476, or Mathematics 69.353★ or 70.355★, (with a grade of C- or better).

Lectures three hours a week.

**Economics 43.480★****Research Seminar in Urban Economics**

An enquiry into the internal dynamics of cities and inter-urban relationships primarily through directed research.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.220 or Mathematics 69.266★ and 69.267★, (with an average grade of C- or better on these prerequisites).

**Economics 43.483****Applied Time Series Analysis in Economics and Business**

An introduction to basic concepts of time series analysis with emphasis on model building and forecasts in economics and business. Topics include: models for stationary and nonstationary time series, model identification, estimation, computation of forecasts and transfer function models. Also offered at the graduate level, with additional or different requirements, as Economics 43.573, for which additional credit is precluded.

Prerequisites: Economics 43.220 (with a grade of C+ or better), or Mathematics 69.266★ and 69.267★ (or equivalent), (with an average grade of C+ or better).

**Economics 43.484★****Advanced Topics in Applied Econometrics**

Advanced coverage of one or more areas of current interest in applied econometrics. An empirical research project may be required.

Prerequisites: Economics 43.476★ and 43.477★ (with an average grade of C- or better on these prerequisites).

**Economics 43.486★****Comparative Economic Systems I**

This course builds a framework for the study and comparison of economic systems. Using basic economic tools, it discusses the properties and comparative advantages of different contemporary economies, as well as the forces that cause or prevent change. Some Marxian theory is included, along with analyses of the role of property rights, of incentives and motivation, and of the interaction between economic and political systems.

Also offered at the graduate level, with additional or different requirements, as Economics 43.586, for which additional credit is precluded.

Prerequisite: Economics 43.201★ or 43.202★ (with a grade of C- or better), or permission of the Department.

Lectures three hours a week.

**Economics 43.487★****Comparative Economic Systems II**

A comparison of contemporary economic systems. Such diverse economies as Japan, West Germany, Sweden, the U.S.S.R., China, Cuba, Yugoslavia and Hungary may be explored.

Also offered at the graduate level, with additional or different requirements, as Economics 43.587, for which additional credit is precluded.

Prerequisite: Economics 43.201★ or 43.202★ (with a grade of C- or better), or permission of the Department.

**Economics 43.490****Honours Seminar**

This seminar focuses on the use of basic economic analysis in a small number of research topics to be selected by the instructors. A major research paper is required. This seminar is intended for Fourth-year Honours Economics students.

Prerequisites: Economics 43.420★ and 43.421★ or permission of the Department.

Lectures three hours a week.

**Economics 43.493★****Tutorial in Economics**

An additional tutorial in Economics may be taken subsequent to, or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

**Economics 43.494★****Tutorial in Economics**

An additional tutorial in Economics may be taken subsequent to or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

**Economics 43.498****Honours Essay**

Students taking Honours in Economics may write an Honours essay during their final year. This essay counts for one credit. Students work under an individual faculty adviser.

Prerequisite: Permission of the Department.

# Electronics (Engineering)

5170 Mackenzie Building  
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## Academic Administration

**Chair, J.S. Wight**

## Teaching Staff

### Professors Emeriti

**A.R. Boothroyd**, B.Sc., Ph.D. (London) • **M.A. Copeland**, B.Eng. (Manitoba), M.Eng. (Toronto), Ph.D. (Toronto)

### Professors

**Chong Hon Chan**, B.S. (National, Taiwan), M.A.Sc., Ph.D. (Waterloo), P.Eng. • **Robert G. Harrison**, B.A., M.A. (Cambridge), Ph.D. (London), D.I.C. (Imperial College) • **T.A. Kwasniewski**, M.Sc., Ph.D. (Warsaw Technical University), P.Eng. • **Michel Nakhla**, B.Sc. (Cairo), M.Sc., Ph.D. (Waterloo), P.Eng. • **W. Martin Snelgrove**, B.A.Sc., M.A.Sc., Ph.D. (Toronto) • **B.A. Syrett**, B.Eng., M.Eng. (Carleton), Ph.D. (Alberta), P.Eng. • **N. Garry Tarr**, B.Sc., Ph.D. (British Columbia), P.Eng. • **J.S. Wight**, B.Sc. (Calgary), M.Eng., Ph.D. (Carleton), P.Eng.

### Associate Professors

**J.P. Knight**, B.Sc. (Queen's), M.A.Sc., Ph.D. (Toronto) • **Tom J. Smy**, B.Sc., Ph.D. (Alberta) • **P.D. van der Puije**, B.Sc. (Kumasi), D.I.C. (Imperial), Ph.D. (London) • **David J. Walkey**, B.Sc., Ph.D. (Calgary), P.Eng. • **Qi-jun Zhang**, B.Eng. (East China Institute), Ph.D. (McMaster)

### Assistant Professors

**R.M. Mason**, B.Sc. (St. Francis Xavier), M.Eng. (Carleton), Ph.D. (Technical University of Nova Scotia) • **Calvin Plett**, B.A.Sc. (Waterloo), M.Eng., Ph.D. (Carleton) • **Niall Tait**, B.Sc. (Alberta), M.A.Sc. (British Columbia), Ph.D. (Alberta)

### Instructor

**T.G. Ray**, B.Eng., M.Eng. (Carleton), P.Eng.

### Distinguished Research Professor

**A.R. Boothroyd**

### Adjunct Research Professors

**M.A. Copeland** • **F.H. Palmer** • **M. Schroter**, Rockwell Semiconductor • **P.C. Strickland**, CAL Corporation • **M.G. Stubbs**, CRC • **V. Szwarc**, CRC • **R.E. Thomas**

The Departments of Electronics and Systems and Computer Engineering offer courses in Computer Systems Engineering and Electrical Engineering programs (please see p. 104, p. 105 and p. 427).

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

### Engineering 97.251 ★ Circuits and Signals

Properties of signals. Basic circuit elements: voltage and current sources. Kirchhoff's laws, linearity, superposition. Thevenin and Norton's theorems. Circuit simplification. AC steady-state analysis: impedance, admittance, phasors, frequency response. Transient response of RL and RC circuits: form of response, initial and

final conditions. RLC circuits: resonance.

Prerequisites: Mathematics 69.105 ★ and Physics 75.104 ★ (or 75.101 ★ and 75.102 ★).

Lectures three hours a week, laboratory and problem analysis three hours a week.

### Engineering 97.257 ★

#### Electronics I

Qualitative semiconductor physics, leading to the diode equation. Diode applications. Operational amplifiers and their application in feedback configurations including active filters. Introduction to bipolar transistors and MOSFETs, biasing and simple circuit applications. Transistor structure of digital logic gates.

Prerequisite: Engineering 97.251 ★.

Lectures three hours a week, laboratory and problem analysis three hours a week.



Engineering 97.267★

**Switching Circuits**

Boolean algebra, gate, combinatorial circuits. DeMorgan notation, sum-of-product and product-of-sum forms. Logic arrays, PLAs and PALs. Flip-flops, latches, sequential circuits, state graphs and state minimization. Counters and controllers. Hazards. Asynchronous sequential circuits, race free assignment, realization.

Precludes additional credit for Engineering 94.267★/94.367★ or 97.367★.

Prerequisite: Engineering 97.251★ or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.315★

**Basic EM and Power Engineering**

Electrostatics and magnetostatics. Solution of Poisson's and Laplace's equations. The Lorenz equation and force. Time varying fields. Magnetic circuits and transformers. DC and AC motors.

Precludes additional credit for Engineering 97.261★ or 97.354★. Prerequisites: Mathematics 69.204★ and Physics 75.104★ (or 75.101★ and 75.102★).

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.350★

**Digital Electronics**

Digital circuit design using verilog and logic synthesis, the electronic properties of logic gates, electrical interfacing between logic families, asynchronous to synchronous interfacing, clock distribution and timing, VLSI design options. Students implement substantial circuits with field-programmable gate arrays.

Prerequisites: Engineering 97.257★ and 97.267★.

Lectures three hours a week, laboratory three hours a week.

Engineering 97.359★

**Electronics II**

Introduction to semiconductor devices and ICs. DC, AC and switching properties of BJTs. Linear amplifiers; bandwidth considerations; two-port analysis. Large signal amplifiers; power amplifiers; transformerless circuits. Feedback and operational amplifiers; gain, sensitivity, distortion and stability. Filter design. Oscillators.

Prerequisite: Engineering 97.257★.

Lectures three hours a week, laboratory three hours a week.

Engineering 97.365★

**Electrical Engineering**

DC circuits: elements, sources, analysis. Single phase AC circuits: phasors, RLC circuits, real and reactive power, impedance, network analysis, three phase systems. Power transformers. DC motors: operation and characteristics. AC motors: single phase and three phase.

Not open to students in Electrical Engineering, Computer Systems Engineering, or Aerospace Stream C.

Prerequisites: Mathematics 69.105★ and Physics 75.104★ (or 75.101★ and 75.102★).

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 97.395★

**Professional Practice**

This course familiarizes students with current engineering practice. Presentations by faculty and external lecturers cover topics including the Professional Engineers Act, ethics, responsibilities and engineering practice. The development of communication skills, both oral and written, is emphasized.

Precludes additional credit for Engineering 82.495★, 86.495★ and 94.395★.

Prerequisite: Third-year registration.

Lectures three hours a week.

Engineering 97.398★

**Physical Electronics**

Fundamentals of solid-state physics as applied to semiconductors: energy bands; electrons and holes; doping; carrier transport; recombination. Theory of the pn junction in forward and reverse

bias. Application to MOS capacitors, MOSFETs, bipolar junction transistors and photonic devices.

Precludes additional credit for Engineering 97.368★.

Prerequisites: Chemistry 65.111★, Mathematics 69.204★, Physics 75.104★ (or 75.101★ and 75.102★), Electronics 97.257★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 97.399★

**Electromagnetic Waves**

Maxwell's equations and solutions. Wave equations and propagation. Interaction of electromagnetic waves with matter. Photons, basic quantum mechanical transitions. Transmission lines and distributed parameter models for RF. Fiber optic cable and waveguides. Lasers, PIN diodes, photovoltaic devices and device fabrication.

Prerequisite: Electronics 97.398★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 97.452★

**Microwave Circuits**

Introduction to microwave tubes, semiconductor devices, and passive components. Scattering matrix description of microwave junctions. Properties of basic reciprocal and non-reciprocal passive microwave devices. Fundamentals of microwave amplifiers and oscillators. Design of solid-state microwave amplifiers and oscillators.

Prerequisite: Engineering 97.453★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.453★

**Radio Frequency Lines and Antennas**

Introduction to distributed circuits, travelling and standing waves, reflection coefficient, SWR, impedance transformation, Smith charts. Introduction to transmission lines; coaxial, rectangular waveguide, resonators, optical fibers. Introduction to antennas; gain, directivity, effective area. Introduction to linear arrays.

Prerequisite: Engineering 97.399★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.454★

**Avionics Systems**

Electromagnetic spectrum. Air data sensing, display. Communications systems. Navigation and landing systems; ground-based, inertial and satellite systems. Airborne radar. Guidance, control for aircraft, autopilots; stability augmentation; active control; sensor requirements; display techniques. Aircraft power systems. Safety systems. Vehicle/systems integration, certification. Not appropriate for Aerospace Stream C.

Precludes additional credit for Engineering 87.454.

Prerequisites: Engineering 94.360★ and 97.365★.

Lecture three hours a week.

Engineering 97.455★

**Telecommunication Circuits**

A course of study of the commonly used circuit components in modern telecommunication systems. Both analog and digital systems are included. The design of the hardware is emphasized. Examples are drawn from broadcasting, telephony and satellite systems.

Prerequisites: Engineering 94.351★ and 97.359★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.456★

**CAD for Communication Circuits**

Basic principles of Computer-Aided Design tools used for analysis and design of communication circuits and systems. Frequency and time-domain analysis. Noise and distortion analysis. Transmission line effects. Sensitivity analysis, and circuit performance optimization. Digital simulation.

Prerequisite: Fourth-year registration.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.



**Engineering 97.459★****Communication Links**

Fundamentals; decibel, intermodulation, idB compression, dynamic range, SNR, noise figure, noise temperature, antenna gain, EIRP, G/T. Line-of-sight links; receiver, diversity, fade margin. Satellite links; link calculations, multiple accessing, earth stations. Fiber links, fiber types, sources, detectors, systems.

Prerequisite: Fourth-year registration or permission of the Department.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

**Engineering 97.460★****Radar and Navigation**

Radar: operation, minimum detectable signal, propagation effects. Surveillance Radars: Moving Target indicator and Pulse Doppler operation. Radio Navigation: pulsed and CW operation. Operational systems: Loran C., VOR/DME, TACAN, Global Positioning system. Inertial Navigation. Navigation Co-ordinate Systems. Techniques for determining best estimates of position.

Prerequisite: Engineering 97.453★.

Lectures three hours a week.

**Engineering 97.461★****Microprocessor Systems**

Interfacing aspects in microprocessor systems. Microprocessors and bus structures, internal architecture, instruction set and pin functions. Memory interfacing, input-output, interrupts, direct memory accesses, special processors and multiprocessor systems.

Precludes additional credit for Engineering 94.361★ and Computer Science 95.306★.

Prerequisites: Engineering 94.203★ or 94.303★ and 97.267★; or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 97.469★****Integrated Circuit Design and Fabrication**

Introduction to nMOS IC design: static logic gates, noise margin, transmission gates, factors influencing switching speed, dynamic logic, input protection, output buffers, circuit simulation with SPICE. Laboratory work includes design and layout of a simple nMOS IC which is fabricated and returned for testing.

Prerequisite: Engineering 97.350★.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

**Engineering 97.470★****Modelling of Integrated Devices**

The operation and modelling of integrated semiconductor devices. Topics include: physical models, analytic device models, their limitations and, where appropriate, their implementation in commercial circuit simulators, parameter extraction and numerical simulation.

Prerequisite: Engineering 97.398★.

Lectures three hours a week, problem analysis two hours alternate weeks.

**Engineering 97.475★****Electronic Materials, Devices and Transmission Media**

Review of solid-state theory, conductors, semiconductors, superconductors, insulators, and optical and magnetic properties. Devices used in modern high speed electronic and communication

systems: transistors, lasers, photodiodes, fiber optics, Josephson junctions. Implications of material properties on fabrication and operation of devices and circuits.

Precludes additional credit for Engineering 94.475★.

Prerequisite: Fourth-year registration.

Lectures three hours a week.

**Engineering 97.476★****Digital Integrated Electronics**

Lectures and hands-on experience introduce advanced concepts in digital interfacing and hardware simulation. Industry standard VME bus operation, VHDL programming and simulation, programmable logic devices, memory devices. A modern laboratory supports VME multiprocessing, VHDL modelling and hardware design.

Prerequisite: Engineering 97.350★.

Lectures two hours a week, laboratory three hours a week.

**Engineering 97.477★****Analog Integrated Electronics**

Emphasis on integration of analog signal processing techniques in monolithic IC technology. Continuous active filter design. MOS IC technology. OP amp design. Basic sampled data concepts; Z-transform analysis, switched capacitor filters. Noise aspects. Bipolar technology: radio frequency IC design.

Prerequisite: Engineering 97.359★.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

**Engineering 97.478★****Advanced Digital Integrated Circuit Design**

VLSI design based on CMOS technology; switching characteristics of CMOS logic circuits; cell libraries; structured design and test, Computer-Aided Design tools, design for testability. Laboratory emphasis on design methods using synthesis from Verilog Code.

Prerequisite: Fourth-year registration in Electronics or permission of the Department.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

**Engineering 97.496★****Special Topics in Electrical and Computer Systems Engineering**

At the discretion of the Engineering Faculty Board, a course dealing with selected advanced topics of interest to Electrical and Computer Systems engineering students may be offered. (Also listed as Engineering 94.496★.)

Prerequisite: Fourth-year registration.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

**Engineering 97.497****Engineering Project**

Students are required to select and complete a major project in engineering analysis, design, development or research. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc.

**Engineering 97.498****Engineering Project**

Students are required to select and complete a major project in engineering analysis, design, development or research. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc.



# English Language and Literature

## (Arts and Social Sciences)

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1812 Dunton Tower  
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### Academic Administration

Chair, L.T.R. McDonald  
Supervisor of Graduate Studies, R.L. Hogg

Supervisor of Undergraduate Studies, J.D. Campbell

### Teaching Staff

#### Professors Emeriti

**A.M. Beattie**, B.A. (Toronto), A.M., Ph.D. (Columbia), D.Litt. (Carleton) • **George B. Johnston**, B.A., M.A. (Toronto), LL.D. (Queen's), D.Litt. (Carleton) • **R.L. McDougall**, B.A. (British Columbia), M.A., Ph.D. (Toronto), D.Litt. (Carleton)

#### Professors

**Donald A. Beecher**, M.A. (California), Ph.D. (Birmingham) • **Mary Jane Edwards**, B.A. (Toronto), M.A. (Queen's), Ph.D. (Toronto) • **John J. Healy**, M.A. (Leeds), Ph.D. (Texas)

#### Associate Professors

**M. Ian Cameron**, B.A., Ph.D. (Toronto) • **John Douglas Campbell**, B.A. (Alberta), Phil.M. (Toronto) • **Brenda J. Carr**, B.A. (Evangel College), M.A. (Northeastern), Ph.D. (Western Ontario) • **Parker Duchemin**, B.A., M.A. (Toronto), Ph.D. (London) • **Barbara Gabriel**, B.A. (Manitoba), M.A. (Minnesota), Ph.D. (London) • **Barbara Carman Garner**, B.A. (New Brunswick), M.A. (Toronto), Ph.D. (London) • **A.W. Heldemann**, B.A., M.A. (St. Louis), Ph.D. (Toronto) • **T.J. Henighan**, B.A. (St. John's, N.Y.), M.Litt., Ph.D. (Durham) • **Robert L. Hogg**, B.A. (British Columbia), Ph.D. (New York at Buffalo) • **Robert G. Laird**, B.A. (British Columbia), M.A., Ph.D. (Yale) • **Christopher Levenson**, B.A. (Cambridge), M.A. (Iowa) • **Robert B. Lovejoy**, A.B. (Albany), M.A. (Kentucky), Ph.D. (Case Western Reserve) • **Lindsay A. Mann**, B.S. (Santa Clara), M.A., Ph.D. (Illinois) • **L.T.R. McDonald**, B.A. (Royal Military College), M.A. (Carleton), Ph.D. (Queen's) • **Kathleen O'Donnell**, B.A. (McGill), M.A. (Western Ontario), Ph.D. (Montréal) • **Enoch D. Padoisky**, B.A. (Manitoba), M.A., Ph.D. (California) • **James Steele**, M.A. (Toronto), Ph.D. (London) • **Alistair Tilson**, M.A. (St. Andrews), B.Litt. (Oxford) • **Priscilla Walton**, B.A., M.A. (McMaster), Ph.D. (Toronto)

#### Assistant Professors

**Barbara L. Leckie**, B.A. (Toronto), M.A., Ph.D. (McGill) • **T.G. Nollet**, B.A. (Saskatchewan), M.A. (Wisconsin), M.Phil. (Waterloo)

#### Lecturer

**A. Ruffo**, B.A. (Ottawa), M.A. (Windsor)

#### Adjunct Research Professors

**J. Flood** • **F. Gildenhuys** • **M. Gnarowski** • **Robert H. MacDonald** • **R.D. Mathews** • **J.H.C. Reid** • **B. Rutland** • **D.J. Wurtele**

#### Adjunct Professors

**V.K. Chari** • **Charles Haines** • **K.J. McGillivray** • **A. McLay** • **J. Noonan** • **G.J. Wood**

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### General Information

Beginning in 1998-99 the English Department is introducing changes in requirements for its Majors students (both B.A. (Honours) and B.A. programs), as well as introducing a Minor in English. These new program requirements will apply to all students, both new and returning. Returning students with questions about their program should contact the Supervisor of Undergraduate Studies.

For a full description of course topics, requirements and readings, consult the Departmental Handbook, published every year in June. The Handbook is available from the Department Office,

1812DT, and on the Web at [www.carleton.ca](http://www.carleton.ca) under the menu item Faculty of Arts and Social Sciences, then English.

### Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements as set out below.

## B.A. (Honours) Program

The Honours program consists of 10.0 credits in English:

1. 1.0 credit at the 100-level (18.162 recommended);
2. English 18.230;
3. English 18.282;
4. English 18.334;
5. English 18.352;
6. 5.0 additional credits, at least 2.0 of which must be at the 400-level.

**Note:** Fourth-year standing is interpreted as the completion of a minimum of 14.0 credits in the Honours program.

## Combined B.A. (Honours) Programs

The Combined B.A. (Honours) program consists of 6.0 credits in English:

1. 1.0 credit at the 100-level (18.162 recommended);
2. English 18.230;
3. English 18.282;
4. English 18.352;
5. 2.0 additional credits, 1.0 of which must be at the 400-level.

### Combined Honours, English and Journalism

A Combined Honours program in English and Journalism may be arranged for students who are admitted to the School of Journalism and Communication.

Candidates for the degree of Bachelor of Journalism, Combined Honours Journalism and English, take a total of 20.0 credits (20.5 credits if admitted prior to 1995-96). The 6.0 required English credits are the same as for any other Combined Honours program in English.

Candidates for the degree of Bachelor of Arts, Combined Honours English and Journalism, take a total of 20.0 credits (20.5 credits if admitted prior to 1995-96). The 6.0 English credits required for the Combined Honours program must include English 18.498.

## B.A. Program

The B.A. program in English consists of a minimum of 6.0 credits in English:

1. 1.0 credit at the 100-level (18.162 recommended);
2. English 18.230;
3. English 18.282;
4. English 18.352;
5. 2.0 additional credits.

## Minor in English Language and Literature

The Minor consists of 4.0 credits in English, as follows:

1. 1.0 credit at the 100-level (18.162 recommended);
2. English 18.230;
3. English 18.282;
4. English 18.352.

## Academic Standing

In order to continue in the B.A. program, a student must attain a GPA of 4.0 or better in the First-year course in English. A GPA of 4.0 or better must be maintained thereafter in English courses.

## Certificate in English Language and Composition

This is an in-service certificate intended primarily for practising teachers and designed to upgrade their knowledge of those areas of language and of writing theory which underlie the new Ontario guidelines and support documents.

**Admission requirement:** a university degree or teaching certificate.

To receive the Certificate in English Language and Composition, students must meet the following requirements:

1. English 18.295;
2. English 18.247;
3. English 18.495;
4. 2.0 credits chosen from the following: English 18.206, 18.305, Linguistics 29.264★, 29.271★, 29.425, or a course approved by the Department.

**Note:** The same course cannot be counted towards both a degree and the certificate. If any of the courses required for the certificate have already been taken for a degree, then the student must choose an approved option to replace them. Not all the above-listed courses may be offered in any one year.

## Graduate Program

The Department of English Language and Literature offers courses of study leading to the degree of Master of Arts. Students may choose a program consisting of course work and thesis or one consisting of course work and a research essay. For further details consult the *Graduate Studies and Research Calendar* and the Department's *Handbook of Advice for Graduate Students in English*.

## Restricted-Enrolment Workshops

Students who wish to enrol in the following courses: English 18.200★, English 18.201★, English 18.291★ or English 18.293★, should note the following:

1. Enrolment in these workshop courses is restricted.
2. By August 21, 1998 students interested in either English 18.291★ or 18.293★ must submit a portfolio of work. Further information about these courses may be obtained from the Department.
3. A list of students admitted into these courses will be posted in the Department on August 30, 1998.
4. During the Fall registration period, all applicants should register in an alternative course or courses to assure themselves that they are in the number of courses they wish to take, in the event they are not admitted to a workshop.

## Reading Lists

Detailed reading lists will be available from the Department of English Language and Literature (1812 Dunton Tower) after May 31. If you are out of town and want a copy of a reading list please send a stamped self addressed envelope to: Book List, English Department, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6.

## Courses of Interest to Students in Other Disciplines

The Department offers a number of courses of special interest to students outside the English programs, such as English 18.100, English 18.101; English 18.105; English 18.203; English 18.206; English 18.208; English 18.212★; English 18.217★; English 18.264; English 18.290★; English 18.292; English 18.296.



## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

First-Year Seminar in English 01.104  
**Survey of English Literature**  
 See course description on p. 84.

First-Year Seminar in English 01.105  
**Writing and Language**  
 See course description on p. 84.

First-Year Seminar in English 01.106  
**Twentieth-Century Literature**  
 See course description on p. 84.

English 18.100  
**English Literature from Chaucer to T.S. Elliot**  
 A study of significant works of English literature, presented as a general historical survey from the fourteenth to the twentieth centuries.  
 Precludes additional credit for First-Year Seminar 01.104.  
 Lectures three hours a week.

English 18.101  
**English and Continental Texts**  
 A study of works by English and continental writers. The list of authors to be read usually includes Dante, Boccaccio, Chaucer, Shakespeare, Byron, Flaubert, Tolstoy, Ibsen and O'Casey. Consult the instructor or the Department for complete reading lists. The continental texts are read in translation.  
 Lectures three hours a week.

English 18.105  
**Writing and Language**  
 This course seeks to improve the writing of students from all disciplines through a study of the principles of logic, grammar and rhetoric, and through the application of those principles in frequent writing assignments.  
 Precludes additional credit for First-Year Seminar 01.105.

English 18.162  
**Twentieth-Century Literature**  
 An introduction to literary study, examining the poetry, drama, and fiction of the twentieth century, against the background of the social, cultural, and artistic issues that have determined the concerns of its writers. This course is recommended for English Honours and B.A. students.  
 Precludes additional credit for First-Year Seminar 01.106.  
 Lectures three hours a week.

English 18.200★  
**Theatre Workshop I**  
 A course dealing with the rudiments of theatrical performance: voice, movement, improvisation, interpretation. Exercises are based upon examples drawn from the classic and contemporary repertoires.  
**Note:** Enrolment is restricted. See Restricted-Enrolment Workshops. (p. 237)  
 Prerequisite: A 100-level credit in English or Second-year standing.

English 18.201★  
**Theatre Workshop II**  
 A course dealing with techniques of characterization, principles of ensemble performance, scene analysis for actors and directors, styles of performance. Exercises are based upon examples from the classic and contemporary repertoires.  
**Note:** Enrolment is restricted. See Restricted-Enrolment Workshops. (p. 237)  
 Prerequisite: English 18.200★ or permission of the Department.

English 18.203  
**Introduction to the Novel in English**  
 A historical and critical study of the novel from its beginnings in the eighteenth century to the present. Twelve to fifteen novels are studied.  
 Precludes additional credit for English 18.303.  
 Prerequisite: A 100-level credit in English, or Second-year standing.  
 Lectures three hours a week.

English 18.206  
**Children's Literature**  
 A historical and critical study of children's literature. The course introduces students to critical analysis and assessment of a number of acknowledged classics of children's literature.  
 Prerequisite: A 100-level credit in English, or Second-year standing.  
 Lectures two hours a week.

English 18.208  
**Myth and Symbol**  
 A study of myth and its appearance in literature. The course explores the great myths that gave form to man's search for meaning, and that still strike a deep response in the psyche. A wide range of texts is used to demonstrate the nature and vitality of myth in both its non-literary and literary forms.  
 Prerequisite: A 100-level credit in English, or Second-year standing.  
 Lectures three hours a week.

English 18.209  
**Greek and Latin Literary Genres**  
 A study through English translations of the various genres of Greek and Latin literature, especially those which influenced later European writing: epic, drama, the ode, pastoral poetry, satire. (Also listed as Classical Civilization 13.209.)

English 18.212★  
**Comedy and Satire**  
 A critical examination of the comic and satiric in English literature through a study of representative plays, novels and short stories. The theory of comedy and satire is examined in relation to the texts: types, techniques and themes.  
 Precludes additional credit for English 18.202.  
 Prerequisite: A 100-level credit in English, or Second-year standing.  
 Lectures three hours a week.

English 18.215★  
**History of the Language**  
 A course on the nature and development of the sounds, grammar and spelling of the English language, together with some study of its cultural and stylistic evolution.  
 Precludes additional credit for English 18.205.  
 Prerequisite: A 100-level credit in English or Second-year standing.  
 Lectures three hours a week.

English 18.217★  
**Literature and the Sciences**  
 A course concentrating on certain points of intersection between literature and science, using texts from various periods and genres.  
 Precludes additional credit for English 18.207.  
 Prerequisite: A 100-level credit in English, or Second-year standing.  
 Lectures three hours a week.

English 18.230  
**British Literature: Chaucer to Swift**  
 A study of major authors from Chaucer to Swift.  
 Prerequisite: A 100-level course in English.  
 Lecture three hours a week.

English 18.262★  
**Literature of Ireland**  
 Selected writers of modern Ireland.  
 Precludes additional credit for English 18.362.

**Prerequisite:** A 100-level course in English, or Second-year standing.  
Lecture three hours a week.

English 18.264

**Modern Drama**

The study of drama from the late nineteenth century to the present.

Precludes additional credit for English 18.364.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.266 ★

**Literature of Scotland**

Selected writers of modern Scotland.

Precludes additional credit for English 18.392.

**Prerequisite:** A 100-level course in English, or Second-year standing.

Lecture three hours a week.

English 18.268

**Forms and Conventions of the Cinema**

This course examines the forms, structures and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis and evaluation of film. (Also listed as Film Studies 19.268.)

**Prerequisite:** Film Studies 19.100 or a 100-level credit in English.

Three hours lecture and screening, one hour lecture.

English 18.272

**Introduction to American Literature**

An introduction to the major authors and traditions of American literature from its beginnings to the present.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.282

**Canadian Literature**

A survey of the development of Canadian literature in English from its nineteenth-century beginnings to the present.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.288

**Contemporary English-Canadian and French-Canadian Literature**

This course, which is offered by faculty members from the English and French Departments, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. Students are encouraged to use the French language for self-expression but need not do so. (Also listed as Canadian Studies 12.288 and French 20.288.)

Precludes additional credit for English 18.188.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.290 ★

**Literature of the Self**

A study of the forms, themes and meaning of autobiographical literature. Attention is paid to the history of autobiographical writing and to the autobiography as a social document, but the main focus of the course is on autobiography as part of the modern search for the self.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.291 ★

**Poetry Workshop**

A workshop involving regular assignments in writing poetry and practical criticism based on this work.

**Note:** Enrolment is restricted. See Restricted-Enrolment Workshops. (p. 237)

Precludes additional credit for English 18.291.

**Prerequisites:** A 100-level credit in English and permission of the Department.

Workshop two hours a week.

English 18.292

**Women and Literature**

An exploration of the feminine perspective in literature as well as the changing role of women in society. A theoretical survey of relevant issues provides a general framework for the course; the main focus, however, is on selected literary texts. Both women authors and the feminine role in works of literature and in the society that produced them are studied.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.293 ★

**Fiction Workshop**

A workshop involving regular assignments in writing prose fiction and practical criticism based on this work.

**Note:** Enrolment is restricted. See Restricted-Enrolment Workshops. (p. 237)

Precludes additional credit for English 18.293.

**Prerequisites:** A 100-level credit in English and permission of the Department.

Workshop three hours a week.

English 18.294

**Drama to the Nineteenth Century**

A study of selected significant plays from the classical to the modern period of world drama, including classical, medieval, renaissance, restoration and modern drama.

Precludes additional credit for English 18.304.

**Prerequisite:** A 100-level credit in English or Second-year standing.

Lectures three hours a week.

English 18.295 ★

**Introduction to the English Language**

The sound system, vocabulary, syntax and grammar of English.

**Prerequisite:** Second-year standing.

Lectures three hours a week.

English 18.296 ★

**The Writer, Literature and Society**

An examination of the roles adopted by the writer in relation to society, either as apologist, social critic, satirist, moralist, visionary or myth-maker. Texts are chosen from a wide variety of historical periods, but the main focus is on the writer in the modern world.

Precludes additional credit for English 18.296.

**Prerequisite:** A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.297

**Writing: Theory and Practice**

The process of writing in theory and practice. Readings and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationships between thinking and writing; strategies for encouraging growth in writing. (Also listed as Linguistics 29.247.)

Precludes additional credit for Linguistics 29.247.

**Prerequisite:** Second-year standing or enrolment in either of the Certificate Program in English Language and Composition or CTESL program.

English 18.300

**Literary Criticism from Aristotle to the Present**

Problems and questions in literary criticism.

**Prerequisite:** English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.302 ★

**Contemporary Literary Theory**

A study of contemporary approaches to critical analysis: phenomenology, hermeneutics, reception theory, structuralism, semiotics, feminist criticism, dialectical criticism, post-structuralism and deconstruction.

Precludes additional credit for English 18.302.



Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

English 18.305★

**Style, Imagination and Judgment**

An examination of the nature of good and bad writing. The category of imagination as a criterion for judging prose. Conditions favourable to the production of good writing. The cultural effects of bad writing.

Precludes additional credit for English 18.305.

Prerequisite: Third-year standing or enrolment in the Certificate program in English Language and Composition.

Lectures three hours a week.

English 18.312★

**Old English**

A study of Old English language and literature, including grammar and phonology, and translation of selections of Old English prose and poetry.

Precludes additional credit for English 18.312.

Prerequisite: A 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.322★

**Chaucer and the Literature of Medieval England**

A study of Chaucer's works and of the English language and literature between the Norman conquest and the fifteenth century.

Precludes additional credit for English 18.322.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.332★

**Renaissance Literature**

A study of the great age of English literature. Poetry and prose from Wyatt and More to Donne and Milton are considered, representing such literary movements as Christian humanism, classicism and metaphysical literature.

Precludes additional credit for English 18.332, 18.337 and 18.338.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.334

**Shakespeare and the Drama of His Contemporaries**

Selected plays by Shakespeare and his contemporaries.

Precludes additional credit for English 18.236.

Prerequisites: A 100-level course in English and Second-year standing; or permission of the Department.

Lecture three hours a week.

English 18.342★

**Eighteenth-Century Literature**

A detailed study of authors and movements of the period 1660 to 1780.

Precludes additional credit for English 18.242 and 18.342.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.352

**British Literature: The Romantics and The Victorians**

A study of major writers of the nineteenth century.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.353★

**The Novel from Dickens to Conrad**

A study of the English novel from the High Victorian period of Dickens, Thackeray and Eliot to World War I.

Precludes additional credit for English 18.253 and 18.353.

Prerequisites: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.361★

**Twentieth-Century Poetry**

An introduction to the poetry of Great Britain, the United States and Canada in the twentieth century.

Precludes additional credit for English 18.361.

Prerequisites: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.363★

**Twentieth-Century British Fiction**

A study of twentieth-century British fiction. The specific authors may vary from year to year. Consult the Department's reading lists.

Precludes additional credit for English 18.363.

Prerequisites: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.371★

**American Poetry**

A study of twentieth-century American poetry to the 1970s. Attention is given to poetic movements and influences.

Precludes additional credit for English 18.371.

Prerequisites: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.373★

**American Fiction**

A study of the American novel to the present. Attention is given to theories of fiction, movements and influences.

Precludes additional credit for English 18.373.

Prerequisites: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.381★

**Canadian Poetry**

A study of the development of poetry in Canada through selected poets. Authors studied will include: Layton, Souster, Dudek, Birney, Purdy, Atwood, Jones, Kroetsch, MacEwen, Ondaatje, Webb, Bowering, Marlatt, Nichol, Wah.

Precludes additional credit for English 18.381.

Prerequisite: English 18.282 or permission of the Department.

Seminar two hours a week.

English 18.383★

**Canadian Fiction**

A study of selected Canadian novels and the development of Canadian fiction.

Precludes additional credit for English 18.383.

Prerequisite: English 18.282 or permission of the Department.

Seminar three hours a week.

- **Topics or courses at the 400-level change from year to year. Consult the English Department's Undergraduate Studies in English Course Guide for topics offered in 1998-99. The guide is available from the Department of English after April 1st.**

English 18.400★

**Studies in Literary Theory and Criticism**

A study of a selected topic in literary theory and criticism.

Precludes additional credit for English 18.400.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.401★

**Studies in Poetry**

A study of a selected topic in Victorian British poetry.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

English 18.403★

**Studies in the Novel**

A seminar for the study and discussion of the art of the novel as exemplified by major works of fiction. Study includes varieties of form and pattern, modes of narration, imagery and symbolism, realism, and naturalism.

Precludes additional credit for English 18.403.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar two hours a week.

English 18.428★

**Studies in Medieval Literature I**

A study of a selected topic in Medieval literature.

Prerequisites: English 18.322 and Fourth-year standing in Honours English or permission of the Department.  
Seminar two hours a week.

English 18.431★

**Studies in Renaissance Literature I**

A study of a selected topic in Renaissance literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.436★

**Studies in Shakespeare**

A seminar for Honours students, concentrating on critical and scholarly approaches to Shakespeare's work.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.441★

**Studies in Restoration and Eighteenth-Century Literature I**

A study of a selected topic in Restoration or Eighteenth-Century literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar two hours a week.

English 18.447★

**Studies in Romantic Literature I**

A study of a selected topic in Romantic literature.

Precludes additional credit for English 18.448A★ (if taken in 1990-94).

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar two hours a week.

English 18.451★

**Studies in Victorian Literature**

A study of a selected topic in Victorian Literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.452★

**Selected Topic in Victorian Literature II**

A study of a selected topic in Victorian Literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.467★

**Studies in Twentieth-Century British Literature I**

A study of a selected topic in British literature of the twentieth century.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.468★

**Studies in Twentieth-Century British Literature II**

A study of a selected topic in British literature of the twentieth century.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar two hours a week.

English 18.478★

**Studies in American Literature I**

A study of a selected topic in American literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Lectures two hours a week.

English 18.479★

**Studies in American Literature II**

A study of a selected topic in American literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.482★

**Studies in Canadian Ethnic Minority Literature**

A study of selected works by Canadian ethnic minority writers. Precludes additional credit for English 18.482.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.483★

**Studies in the Literature of Quebec and English Canada**

A study of selected works of the literatures of Quebec and English Canada.

Prerequisites: Fourth-year standing in Honours English or permission of the Department.  
Seminar two hours a week.

English 18.486★

**Studies in Canadian Literature I**

A study of a selected topic in Canadian literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.488★

**Canadian Writing and the Literatures of the First Nations**

This course investigates the dominant discourse about Native People in Canadian writing and the literatures produced by storytellers and writers of the First Nations, from the period of first contact until the present. Texts include a wide range of material from Canadian, Indian, Inuit and Métis writers.

Precludes additional credit for English 18.488.  
Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.490★

**Studies in Culture and the Text**

A course in applied literary theory.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.495★

**Research Seminar in English and Education**

Investigation of recent developments in language study, rhetoric and composition, and studies of the literary imagination and their implications for the teaching of English. This course is chiefly intended for practising or future teachers. It may meet on an irregular schedule. Classes may begin before the first week in September.

Precludes additional credit for English 18.495.

Prerequisite: English 18.295 and 18.297 or permission of the Department.  
Seminar two hours a week.

English 18.496★

**Studies in African or Caribbean Literature**

A study of a selected topic in African or Caribbean literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.  
Seminar three hours a week.

English 18.497★

**Studies in Australian and New Zealand Literature or Indian Literature in English**

A study of a selected topic in Australian and New Zealand literature or Indian literature in English.



Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar three hours a week.

English 18.498

**Independent Study**

A course for independent research and writing, under the supervision of a member of the Department, open to students in the Fourth year of Honours with an A- standing in their English

courses. An essay of approximately 10,000 words is the usual written assignment. A written request, outlining the project, with the approval of the supervisor, must be submitted to the co-ordinator by the last day for course changes.

**Note:** This course may be used to fulfil one of the seminar or 400-level requirements for the Honours degree, but it cannot normally fulfil an area requirement or substitute for English 18.230. For students in Combined Honours, however, it is considered to be the equivalent of an Honours Essay.

# Environmental Science (Science)

460 Steacie Building  
Telephone: 520-4483  
Fax: 520-4389

## Academic Administration

**Director, Peeter Kruus**

**Members of the Committee, G. Atkinson • M. Forbes •  
M.W. Smith • D. Wigfield**

## General Information

There is increasing concern throughout most of the world regarding the state of the environment, and interest in understanding the effect of human activity on the environment is widespread. Such a topic cannot be adequately addressed in any of the traditional discipline-based degree programs. Carleton University therefore offers a multidisciplinary program leading to an Honours degree in Environmental Science. This Bachelor of Science degree program has as a requirement a credit in Philosophy and a relevant Social Sciences/Arts sequence. This requirement recognizes that the state of the environment is not simply a matter of science, but also includes consideration of economics, law, politics, philosophy, etc. The primary aim of the program is, nevertheless, to provide a solid grounding in those areas of science that are required to reach an understanding of the environment and how the actions of humanity affect it.

The first two years of the program are structured to ensure that students receive a thorough grounding in those areas of science that are required to address environmental issues. The final two years of study leading to the Honours degree allow for a substantial degree of choice. The program must, however, be designed with a particular specialization in mind, and the choice of most of the course pattern must be done in consultation with the Program Director. The Honours Research Project (Environmental Science 62.496) is meant to give the student an opportunity to do some original research in the specialization developed through the course-pattern chosen in the Third and Fourth years.

A suitable sequence of 2.0 credits in arts or social science is required. Students are advised to consult the Program Director about this at an early stage in the program.

## Admission Requirements

The requirements are those specified for the B.Sc. Honours degrees for the Faculty of Science. (See p. 116.)

## Graduation

In order to graduate, students must fulfil all University regulations (see p. 49) and all Faculty regulations (see p. 117), in addition to the regulations established by the Environmental Science Committee.

## Honours Program

### Summary of Program Requirements

1. 2.5 credits in Environmental Science: Environmental Science 62.150★, 62.359★, 62.396★, 62.496;

2. 1.0 credit in Mathematics: Mathematics 69.107★, 69.257★;
3. 3.0 credits in Geology and Geography: Geology 67.105/Geography 45.105, Geology 67.238★ and 67.285★, Geography 45.318★, and 0.5 credit in approved science courses at the 300- or 400-level in Geography;
4. 2.0 credits in Chemistry: Chemistry 65.100, 65.231★, 65.280★;
5. 2.0 credits in Biology: Biology 61.103★ and 61.104★, 61.214★ (or 61.220★), 61.260★;
6. 0.5 credit in Philosophy: Philosophy 32.184★;
7. 2.0 credits appropriate to Environmental Science in a coherent arts or social science sequence (see *Comments Regarding Course Requirements*, a, p. 244) (of which up to 1.0 credit may be chosen from the list of courses otherwise not acceptable as Social Science electives for Science students). (See p. 117.)
8. 3.5 credits in approved Science courses
9. 1.0 additional credit in approved Science courses at the 400-level;
10. 1.5 credits chosen in consultation with the Program Director; (see *Comments Regarding Course Requirements*, b)
11. 1.0 credit, free elective.

**Note:** The following will be used to calculate the Major GPA: Environmental Science 62.150★, 62.359★, 62.396★, 62.496, Biology 61.260★, Chemistry 65.280★, Geology 67.238★, 1.0 credit of experimental Science at the 100-level, and all of Program requirements 8, 9, and 10.

### Approved Courses for the Science Requirements of the Environmental Science Program

Approved Courses for the Science Requirements of the Environmental Science Program:

Biology 61.201★, 61.202★, 61.220★, 61.304★, 61.311★, 61.314★, 61.325★, 61.331★, 61.335★, 61.351★, 61.361★, 61.362★, 61.364★, 61.365★, 61.381★, 61.391★, 61.413★, 61.414★, 61.416★, 61.419★, 61.430★, 61.463★, 61.469★, 61.481★;

Chemistry 65.311★, 65.312★, 65.315★, 65.321★, 65.322★, 65.325★, 65.335★, 65.353★, 65.354★, 65.355★, 65.370★, 65.380★, 65.431★, 65.432★, 65.480★;

Computer Science 95.102★, 95.103★, 95.104★, 95.105★, 95.107★;

Environmental Science 62.401★;

Geography 45.207★, 45.210★, 45.211★, 45.302★, 45.303★, 45.304, 45.307★, 45.311★, 45.312★, 45.313★, 45.315★, 45.319★, 45.400★, 45.402★, 45.403★, 45.406★, 45.411★, 45.412★, 45.413★, 45.414★, 45.417★, 45.418★;



Geology 67.223★, 67.225★, 67.228★, 67.231★, 67.236★, 67.244★, 67.321★, 67.323★, 67.385★, 67.386★, 67.419★, 67.423★, 67.424★, 67.425★, 67.484★, 67.485★;

Mathematics 69.117★, 69.207★, 69.259★, 69.358★;

Physics 75.101★, 75.102★, 75.291★, 75.292★;

Engineering 81.201★;

Other courses may be substituted with the permission of the Institute.

### Comments Regarding Course Requirements

a) The recommended Social Sciences/Arts sequence should be chosen in consultation with the Program Director. Upper-year courses of interest to students in Environmental Science usually require a First-year prerequisite; therefore this sequence may have to be started in Second year. Suitable sequences can be set up in Economics, Political Science/Law, Human Geography, Sociology, Anthropology, Mass Communication, etc.

b) 1.5 credits can be chosen from any department, but they must be suitable for the program of the individual student. The choice must also be made so that the regulations of the Faculty of Science for the B.Sc. (Honours) degree (see p. 117) are met. It is recommended that these courses be chosen in consultation with the Program Director to ensure a proper foundation for the student's specialization and Honours research project.

c) 62.401★ can be taken as a course in requirement category 8, 10, or 11.

d) Technology, Society, Environment Studies courses 59.301★, 59.302★, 59.350★, 50.401★, 59.402★, 59.403★, 59.405★, 59.406★, 59.407★) can only be taken as courses in requirements 10 or 11.

e) It is highly recommended that the program include a Computer Science course.

### Concentrations

The Environmental Science Committee also offers B.Sc. (Honours) degrees in Environmental Science with concentrations in Biology, Geology or Chemistry.

These concentrations all have the same First year. The Biology and Geology concentrations also have a Second year similar to the basic Environmental Science program.

The Honours Research Project in these concentrations is Environmental Science 62.496. It is expected that the supervisor of the project will be a faculty member of the Department in which the concentration is taken.

#### Biology Concentration

Program Requirements 1 - 7 and 11 are the same as in the above main program:

Requirements 8, 9, and 10 must contain the following courses (4.0 credits total):

61.201★, 61.202★, 61.220★, 61.304★ or 61.311★ or 61.233★ (2.0 credits total), plus *either* any two of 61.361★ or 61.362★ or 61.365★ or 61.366★, and 61.364★, 61.4xx★ (Ecology focus) or 61.314★, 61.413★, 61.4xx★, and one of 61.233★ or 61.311★ or 61.333★ (Microbiology/genetics focus).

#### Geology Concentration

Program Requirements 1 - 7 and 11 are the same as in the above main program:

Requirements 8, 9, and 10 must contain the following courses (5.5 credits total):

67.223★, 67.225★, 67.228★, 67.321★, 67.385★, 67.386★ (3.0 credits total), plus any four chosen from 67.231★, 67.236★, 67.323★, 67.324★,

67.325★, 67.423★, 67.425★, 67.431★, 67.432★, 67.484, 67.485★ (2.0 credits total), and Mathematics 69.117★.

### Chemistry Concentration

1. 2.0 credits in Environmental Science: 62.150★, 62.359★, 62.496;

2. 1.0 credit in Mathematics: 69.107★, 69.257★;

3. 3.0 credits in Geology and Geography: Geology 67.105/Geography 45.105, Geology 67.238★ and 67.285★, Geography 45.318★ and 0.5 credit in approved Science courses at the 300- or 400-level in Geography;

4. 8.0 credits in Chemistry: 65.100, 65.211★, 65.212★, 65.223★, 65.224★, 65.232★, 65.233★, 65.335★, 65.353★, 65.380★, 65.480★, 65.4xx★, plus *either* 65.321★, 65.322★, 65.325★ (Organic focus), or 65.354★, 65.355★, 65.2xx or greater (Inorganic focus), or 65.311, 65.315★ and Mathematics 69.207★ (Physical focus);

5. 2.0 credits in Biology: 61.103★, 61.104★, 61.260★, 61.214★;

6. 1.0 credits in Physics: 75.107★, 75.108★;

7. 0.5 credits in Philosophy: 32.184★;

8. 1.5 arts or social science credits appropriate to Environmental Science;

9. 1.0 credit, free elective.

### Minor in Geographic Information Processing

A Minor in Geographic Information Processing (GIP) is available to Environmental Science students. See p. 262 for details.

### Minor in Business in Environmental Science

A Minor in Business is available to Environmental Science students. See p. 167 for details.

### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Environmental Science 62.150★

#### Environmental Science Seminar

The purpose and nature of the program; society's view on the natural and human-modified environment; major environmental issues and their scientific aspects; preparation and presentation of paper and seminars.

Prerequisite: Registration in the Environmental Science Program. Lectures, seminars and workshops four hours a week.

Environmental Science 62.359★

#### Group Project

Major project relating to an issue involving environmental science; effective methods of team research and presentation of group work.

Prerequisite: Registration in Third year of the Environmental Science program or permission of the Program Director. Lectures, seminars and workshops three hours a week.

Environmental Science 62.396★

#### Research Planning

Assists students in preparing a research plan and proposal for their Fourth year Honours project; discussion and workshop experience in the fundamentals of scientific investigation, including use of literature, theory and data, preparation and evaluation of a scientific research proposal.

Prerequisite: Registration in Third year of the Environmental Science program, or an Honours Science program with permission

of the Program Director.

Discussion groups and workshops three hours a week.

#### Environmental Science 62.401 ★

##### **Environmental Science Practicum**

Experience in an external agency setting, translating the academic dimension into practical involvement with environmental issues. Requires a final report integrating the placement experience with the student's background knowledge. Graded *Sat/Uns*.

Prerequisite: Registration in Fourth year of the Environmental Science program.

#### Environmental Science 62.496

##### **Honours Research Project**

An independent investigation into an aspect of environmental science supervised by a member of the faculty. Approval of the topic and the research schedule must be obtained from the project supervisor and the program director before the last date for late registration.

Prerequisite: Registration in Fourth year of the Environmental Science program and permission of the Program Director.



# Environmental Studies

## (Arts and Social Sciences)

Room B349 Loeb Building  
Telephone: 520-2561 or 520-2600, ext. 8370  
Fax: 520-4301

### Academic Administration

**Program Co-ordinator,** Nancy C. Doubleday

**Members of the Committee,** To be announced

### General Information

The B.A. program in Environmental Studies is founded on the premise that the social sciences and humanities can make a significant contribution to the study of environmental issues. The program is designed to enable students to develop an interdisciplinary perspective on human interaction with the environment. To this end it introduces students to the range of social, cultural, economic, political, legal and ethical factors affecting human interaction with the environment, while at the same time ensuring they acquire a basic literacy in the physical and biological sciences.

In the course of their studies, students will develop an understanding and appreciation of the environmental consequences of individual and collective human actions and policies. The program will expose students to the approaches of various disciplines to understanding the environment, as well as the differences and inconsistencies between the various approaches. In addition students will be introduced to methods and techniques appropriate for examining environmental questions from a human and social perspective.

The Major in Environmental Studies is offered as both the B.A. (Honours) and B.A. degree.

Honours graduates from this program could be eligible to undertake graduate study in Environmental Studies, as well as Geography, Sociology, Political Science, Legal Studies, Philosophy, or some other discipline. Students who contemplate going on to graduate work should seek appropriate advice on selecting their program electives and options.

The program is administered by the Department of Geography and Environmental Studies.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation requirements (see p. 49), all Faculty requirements including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements set out below.

### B.A. (Honours) Program

For the B.A. (Honours) degree, the Environmental Studies program consists of a total of 12.0 credits, with a core of 8.0 credits plus 4.0 program electives. The remaining 8.0 credits for the degree are free options.

1. Science 60.101 ★ and 60.102★;
2. Philosophy 32.184★;
3. Geography 45.102★;
4. Environmental Studies 57.200★;
5. Science 60.201 ★ and 60.202★;

6. One of: Economics 43.220; Geography 45.205★ and 45.206★, or 45.204; Political Science 47.270; Psychology 49.200; Sociology 53.203;

7. Environmental Studies 57.300★;

8. One of: Philosophy 32.284★; Law 51.380★;

9. Biology 61.393★ or 61.216★ or 0.5 Science Continuation Credit;

10. Environmental Studies 57.400★;

11. Environmental Studies 57.401★;

12. Environmental Studies 57.497;

13. 4.0 credits to be chosen from the list of Program Electives (see below). At least 1.5 of these credits must be at the 300-level or above.

### B.A. Program

For the B.A. degree, the Environmental Studies program consists of a total of 8.0 credits, with a core of 5.5 credits plus 2.5 program electives. The remaining 7.0 credits for the degree are free options.

1. Science 60.101 ★ and 60.102★;

2. Philosophy 32.184★;

3. Geography 45.102★;

4. Environmental Studies 57.200★;

5. Science 60.201 ★ and 60.202★;

6. One of: Economics 43.220; Psychology 49.200; Sociology 53.203; Political Science 47.270; Geography 45.205★ and 45.206★, or 45.204;

7. Environmental Studies 57.300★;

8. One of: Philosophy 32.284★; Law 51.380★;

9. 2.5 credits to be chosen from the list of Program Electives (see below). At least 1.0 of these credits must be at the 300-level or above.

### Prerequisites

In choosing optional courses, especially in First year, students should take into account the prerequisite requirements for courses they will be taking in subsequent years. In particular, as preparation for the statistics/methodology course in requirement 6 (see B.A. (Honours) and B.A. program, p. 246), students should include in their First-year course selection an introductory course in at least one of Economics, Sociology, Political Science or Psychology. These courses, along with the introductory course in Law, and an additional 0.5 credit in Geography also serve as prerequisites to many of the courses listed below as Program Electives.

## Program Electives

The Environmental Studies major requires a minimum number of Program Electives (see B.A. (Honours) and B.A. program, p. 246). The list of acceptable electives is laid out below. The courses are grouped according to four themes. Students may concentrate their electives within a single theme or distribute them over various themes according to personal interests and career goals. Students should consult the program co-ordinator about a strategy appropriate for their individual goals, especially if these plans include eventual graduate study.

Additional selections may be made from the departments whose courses appear below. Students may also select courses from Chemistry, Physics, Earth Sciences, Architecture which relate to their chosen theme.

### Environment, Economy and Development

#### *Biology*

61.216★

#### *Economics*

43.385★, 43.386★

#### *Central/East European and Russian Area Studies*

55.405★

#### *Geography*

45.211★, 45.220★, 45.311★, 45.329★, 45.336★, 45.404★, 45.430★, 45.443★, 45.445★

#### *History*

24.421

#### *Sociology/Anthropology*

54.206★, 56.253★, 53.451★

#### *Technology, Society, Environment*

59.300, 59.350★, 59.401★, 59.402★

### Environment, Policy and Law

#### *Geography*

45.404★, 45.426★, 45.430★

#### *History*

24.421

#### *Law*

51.205, 51.305★, 51.380★

#### *Political Science*

47.200, 47.402★

#### *Sociology*

53.348★, 53.380, 53.440★

#### *Technology, Society, Environment*

59.300, 59.350★

### Environmental Attitudes and Ethics

#### *Geography*

45.230★, 45.404★, 45.430★, 45.431★

#### *History*

24.421

#### *Philosophy*

32.212★, 32.284★, 32.330, 32.441★

#### *Sociology/Anthropology*

54.206★, 53.348★

#### *Technology, Society, Environment*

59.300, 59.350★

### Human Population and the Built Environment

#### *Architecture*

76.310★, 76.315★, 76.318★, 76.319★, 78.345★, 78.392A★

#### *Engineering*

82.433★

#### *Geography*

45.320★, 45.370★, 45.423★, 45.427★

#### *History*

24.329★

#### *Political Science*

47.302★

#### *Sociology/Anthropology*

53.251★, 53.254★, 53.260★, 54.335★, 53.339★, 53.451★, 53.456★

## Course Suggestions for Free Options

#### *Biology*

61.192★

#### *Canadian Studies*

12.100, 12.302, 12.402

#### *English Language and Literature*

18.296

#### *Geography*

45.302★, 45.319★, 45.335, 45.351★, 45.355★

#### *History*

24.352★, 24.353★, 24.434

#### *Law*

51.374★

#### *Philosophy*

32.211★

#### *Physics*

75.291★, 75.292★

#### *Political Science*

47.303★

#### *Religion*

34.235

#### *Technology, Society, Environment*

59.403★

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

#### Environmental Studies 57.200★

#### **Nature and Environmental Studies**

Conceptual and practical approaches to understanding nature and the environment, involving descriptive, analytic, investigative and experiential methods. Through reading, participation, research and writing, students should demonstrate an ability to integrate various approaches to environmental awareness and analysis.

Precludes additional credit for Environmental Studies 04.200★.

Prerequisite: Second-year standing in the Environmental Studies program or permission of the Environmental Studies Co-ordinator.

Lectures, seminars and field work three hours a week.



**Environmental Studies 57.300★**

**Environmental Studies Colloquium**

Interactions among complex natural systems, social values and attitudes, and economic, political and legal concerns are explored through invited speakers from various disciplines and agencies addressing specific environmental issues.

Precludes additional credit for Environmental Studies 04.300★.

Prerequisite: Third-year standing in Environmental Studies or permission of the Environmental Studies Co-ordinator.

**Environmental Studies 57.400★**

**Environmental Studies Seminar**

How societal institutions respond to environmental concerns, how the environment is understood by various stakeholders and how environmental priorities may be reflected in social, political and economic decision-making. Interdisciplinary case studies are used.

Precludes additional credit for Environmental Studies 04.400★.

Prerequisite: Registration is restricted to students eligible for Fourth-year standing in the B.A. (Environmental Studies) Honours program.

**Environmental Studies 57.401★**

**Environmental Studies Practicum I**

External agency setting provides the basis for translating academic training into practical involvement with environmental issues. Final report which integrates the placement experience with the student's background knowledge is required Graded *Sat/Uns*.

Precludes additional credit for Environmental Studies 04.401★.

Prerequisite: Registration is restricted to students eligible for Fourth-year standing in the B.A. (Environmental Studies) Honours program, and permission of the Environmental Studies Co-ordinator.

**Environmental Studies 57.402★**

**Environmental Studies Practicum II**

External agency setting provides the basis for translating academic training into practical involvement with environmental issues. A final report which integrates the placement experience with the student's background knowledge is required. Graded *Sat/Uns*.

Precludes additional credit for Environmental Studies 04.402★.

Prerequisite: Restricted to students in the Fourth-year of the Environmental Studies Honours program, and permission of the Environmental Studies Co-ordinator.

**Environmental Studies 57.497**

**Honours Essay in Environmental Studies**

Interdisciplinary research essay on an environmental issue, carried out in consultation with a faculty supervisor. The student must consult with the Environmental Studies Co-ordinator in selecting a project and a supervisor.

Precludes additional credit for Environmental Studies 04.497.

Prerequisite: Registration is restricted to students eligible for Fourth-year standing in the B.A. (Environmental Studies) Honours program.

# School for Studies in Art and Culture: Film Studies (Arts and Social Sciences)

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423 St. Patrick's Building  
Telephone: 520-5606

## Academic Administration

**Director,** To be announced

**Assistant Director,** Chris Faulkner

**Supervisor of Graduate Studies,** Chris Faulkner

**Supervisor of Undergraduate Studies,** Chris Faulkner

**Supervisor of Practica,** Laura U. Marks

## Teaching Staff

### Professors

**Christopher G. Faulkner**, B.A. (*Sir George Williams*), M.A. (*Western Ontario*) • **Zuzana M. Pick**, B.A. (*Montréal*), L. ès L., M.A. (*Paris*), D. 3e. cycle (*Paris*)

### Associate Professors

**Mark J. Langer**, B.A. (*Western Ontario*), M.F.A., M.Phil. (*Columbia*) • **George McKnight**, B.A. (*British Columbia*), M.A. (*McMaster*), Ph.D. (*Toronto*)

### Assistant Professors

**André Loiselle**, B.A., M.A., Ph.D. (*British Columbia*) • **Laura U. Marks**, B.A. (*Swarthmore*), M.A., Ph.D. (*Rochester*) • **Charles O'Brien**, B.A. (*Nebraska*), Ph.D. (*Iowa*)

### Adjunct Research Professors

**Blaine Allen**, *Queen's University* • **Peter Baxter**, *Queens University* • **Peter Harcourt**

### Sessional Lecturer

**Patricia Goodspeed**

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## General Information

Film Studies is an academic discipline concerned with the history, criticism, theory and practice of the cinema both as an art form and as a documentary record of our time. The cinema is a source of pleasure and knowledge, and its study should form a part of one's cultural education. The program will enable the student to develop a critical faculty appropriate to intelligent understanding of the cinema by approaching its study as a scholarly activity that rewards systematic research, analysis and exposition.

In designing the curriculum, the Discipline has sought both integration and progressive development. A careful curricular development will ensure intellectual growth through either a B.A. (Honours) or B.A. program devoted to the study of film. While the courses have been articulated together, they remain distinct enough to permit a number of related intellectual approaches to the study of film, and to enable those approaches to be related to work in other disciplines.

## Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 49), all Faculty regulations including those re-

lating to First-Year Seminars and Breadth courses (see p. 72), in addition to all discipline regulations and requirements as set out below.

## Honours Programs

### Honours Program

All students who meet the general University Honours requirements, and who have a GPA of 6.0 or better in Film Studies, will be admitted to, and permitted to continue in, the Honours program. Other applicants will be given individual consideration on application to the Discipline. Honours students must have their program approved by a discipline adviser.

Honours in Film Studies consists of a minimum of 9.0 credits in Film Studies as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.301 ★ and 19.351 ★, and 1.0 additional credit in Film Studies at the 300-level;
4. 2.0 credits in Film Studies at the 400-level;
5. 3.0 additional credits in Film Studies beyond the 100-level.



## Combined Honours Programs

Combined Honours programs may be arranged through the Assistant Director. Both departments or disciplines must approve a Combined Honours program. A Combined Honours program in Film Studies and another subject includes at least 7.0 credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.301 ★ and 19.351 ★, and 1.0 additional credit in Film Studies at the 300-level;
4. 1.0 credit in Film Studies at the 400-level;
5. 2.0 additional credits in Film Studies beyond the First year, 1.0 of which must be at the 300-level or above.

## B.A. Programs

### B.A. Program

All students who elect a B.A. program in Film Studies must have their program approved by a member of the Discipline of Film Studies. The B.A. program in Film Studies consists of a minimum of 6.0 credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. 2.0 credits at the 300-level;
4. 2.0 additional credits in Film Studies beyond the 100-level.

### Combined B.A. Programs

Combined B.A. programs may be arranged with other departments and disciplines in the Faculties of Arts and Social Sciences or Public Affairs and Management. Both departments or disciplines must approve a Combined program.

A Combined B.A. program in Film Studies and another subject includes at least 5.0 credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. 2.0 credits in Film Studies at the 300-level;
4. 1.0 additional credit in Film Studies beyond the 100-level.

## Graduate Study

A Master of Arts program in Film Studies is offered through the Film Studies program of the School for Studies in Art and Culture. For further details see the current *Calendar of the Faculty of Graduate Studies and Research*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Film Studies 19.100

#### Introduction to Film Studies

Introduction to the study of film that considers the nature of the medium, audience perception, historical and technical development of the cinema, and problems of theory and critical method. Focus on style and techniques; a period of film history; the film maker; and film genres.

Lecture and screening three hours a week, discussion one hour a week.

### Film Studies 19.200

#### Film Theory, Historiography and Criticism

This course examines basic questions of film theory, historiography and criticism. Emphasis is given to developing critical skills through a close analysis of films, theoretical and historiographical writings.

Prerequisites: Film Studies 19.100 and Second-year standing; or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.211 ★

#### The Film Industry

The organization of the production, distribution and exhibition practices of various film industries. May include an examination of the relationship between a national film industry and its television industry.

Prerequisite: Film Studies 19.100 or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.216 ★

#### The Documentary

An examination of the work of individual film makers, of documentary styles and of organizations and institutions in the context of the history of documentary film making, including documentaries made for television. Non-fiction films other than documentaries may be considered. (Also listed as Journalism 28.216★.)

Precludes additional credit for Film Studies 19.215 (Journalism 28.215).

Prerequisite: Film Studies 19.100 or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.221 ★

#### National Cinema

This course examines the film production of specific countries in order to determine the themes, the styles, and the character of a national cinema.

Prerequisite: Film Studies 19.100.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.229

#### The Canadian Cinema

A critical examination of Canadian cinema. The course relates the Canadian cinema to other aspects of Canadian culture, including television, and examines the conditions that have affected filmmaking in this country.

Precludes additional credit for Film Studies 19.328.

Prerequisite: Film Studies 19.100 or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.241 ★

#### The Film Maker

A detailed study of the themes, the characteristic style, development and influence of one or more directors.

Prerequisite: Film Studies 19.100.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.261 ★

#### Film Genres

This course examines questions of generic form, drawing examples from world cinema.

Prerequisite: Film Studies 19.100.

Lecture and screening three hours a week, lecture one hour a week.

### Film Studies 19.268

#### Forms and Conventions of the Cinema

This course examines the forms, structures and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis, and evaluation of film. (Also listed as English 18.268.)

Prerequisite: Film Studies 19.100 or a First-year course in English.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.301★

##### Aspects of Film History

A study of major histories of film. Special attention is paid to historiographical assumptions, the critical judgements and the cultural values that have affected past and present evaluations of the cinema.

Precludes additional credit for Film Studies 19.300.

Prerequisites: Film Studies 19.200 and Third-year standing; or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.315★

##### Questions of Documentary Practice

This course examines the theoretical implications of documentary film and documentary television practice. (Also listed as Journalism 28.315★.)

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.325

##### Studies in American Cinema

Focus on features such as the major production companies, the star system, genres, film style, and the role of the individual film maker. The course may also examine the relationship between cinema and television.

Precludes additional credit for Film Studies 19.228.

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.329★

##### Topics in Canadian Cinema

Studies in various aspects of Canadian cinema. Topics may vary from year to year.

Precludes additional credit for Film Studies 19.328.

Prerequisite: Film Studies 19.229 or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.331★

##### Topics in Cinema and Gender

A study of selected topics in gender and cinema with emphasis on critical and historical questions.

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.333

##### Film and Society

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Journalism 28.333.)

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film History 19.342★

##### Film Music

The use of music in film, from the silent era to the present day. Techniques, styles and theory of film music through the examination of selected films. (Also listed as Music 30.342★.)

Lectures three hours a week.

#### Film Studies 19.351★

##### Film Theory

A detailed study of major film theories and their relationship to critical practice.

Precludes additional credit for Film Studies 19.350 and 19.368.

Prerequisites: Film Studies 19.200 and Third-year standing; or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

#### Film Studies 19.371★

##### Topics in Animation, Video, and Experimental Film

A study of selected topics in animation, video or experimental film.

Prerequisite: 1.0 credit in Film Studies at the 200-level or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

#### Film Studies 19.381★

##### Audiovisual Practice

An examination of practical and conceptual approaches to film studies from the point of view of production using models of audiovisual practice.

Prerequisite: Film Studies 19.200.

Lecture/workshops four hours a week.

#### Film Studies 19.400

##### Modes of Historical Research

This course develops the critical and archival skills necessary for individual research in the field of film history, and includes practical research related to the course material.

Prerequisite: Film Studies 19.301★ or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

#### Film Studies 19.421★

##### Selected Topics in National Cinemas

A study of a selected topic in national cinema.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

#### Film Studies 19.429★

##### Selected Topics in Canadian Cinema

A study of selected topics in Canadian cinema.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

#### Film Studies 19.441★

##### Selected Topics in Film Authorship

A study of questions of authorship in the cinema, concentrating on one or more film makers.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

#### Film Studies 19.451★

##### Selected Topics in Film Theory

A study of a selected topic in film theory.

Prerequisite: Film Studies 19.351★ or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

#### Film Studies 19.480★

##### Seminar in Film/Video Archival or Curatorial Practice

Selected topics in film/video archival or curatorial practice, including questions related to cultural policy, exhibition, conservation, and interrelationship of media. Students are expected to bear all travel and other costs arising from required visits to local facilities.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Discipline.

Seminar three hours a week.



Film Studies 19.485★

**Practicum in Film and Film Studies**

Practical experience through working on specific projects under the supervision of staff at a museum, gallery, archive, or production company in the Ottawa area. A maximum of 0.5 credit may be offered in fulfillment of Film Studies requirements.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Discipline.

Film Studies 19.486★

**Practicum in Film and Film Studies**

Practical experience through working on specific projects under the supervision of staff at a museum, gallery, archive, or production company in the Ottawa area. A maximum of 0.5 credit may be offered in fulfillment of Film Studies requirements.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Discipline.

Film Studies 19.487★

**Practicum in Film and Film Studies**

Practical experience through working on specific projects under the supervision of staff at a museum, gallery, archive, or produc-

tion company in the Ottawa area. A maximum of 0.5 credit may be offered in fulfillment of Film Studies requirements.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Discipline.

Film Studies 19.491★

**Special Topic**

This course offers selected topics in film studies not ordinarily available in the regular course program. The choice of topic or topics will vary at least every two years and will be announced well in advance of the registration period.

Prerequisite: Fourth-year standing in Film Studies or permission of the Discipline.

Screening three hours a week, seminar two hours a week.

Film Studies 19.495

**Independent Study**

For students who wish to study a specific topic. Proposed projects must be approved by the Program Committee. Written request outlining the project must be submitted by the first day of Fall term. An essay is the usual assignment.

Prerequisites: Fourth-year Honours standing in Film Studies and permission of the Discipline.

# French

## (Arts and Social Sciences)

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1602 Dunton Tower  
Telephone: 520-2168  
Fax: 520-2149

### Academic Administration

**Chair, Dominique Rosse**

**Assistant Chair, Juliette Kealey**

**Supervisor of Graduate Studies, Charles Doutrelepon**

**Supervisor of B.A. (Honours) Studies, Charles Doutrelepon**

**Supervisor of B.A. Studies, Juliette Kealey**

### Teaching Staff

#### Professors

**Albert Halsali**, B.A. (Liverpool), M.A. (McMaster), Ph.D. (St. Andrews) • **Patricia Smart**, B.A. (Toronto), M.A. (Laval), Ph.D. (Queen's), F.R.S.C. • **Donald W. Smith**, B.A. (York), M. ès L. (Paris), Ph.D. (Ottawa)

#### Associate Professors

**Charles Doutrelepon**, B.A., M.A., Ph.D. (Montréal) • **Robert Fournier**, B.A., M.A. (Québec à Montréal), Ph.D. (Sherbrooke) • **Marie-Odile Junker**, B.A. (Sorbonne Nouvelle), M.A. (Strasbourg), Ph.D. (Sherbrooke) • **Juliette Kealey**, B.A. (Ottawa), M.A. (Montréal) • **Sincialr Robinson**, B.A. (Western Ontario), M.A. (Rochester) • **Alvina Ruprecht**, B.A. (Carleton), M.A. (McGill), Ph.D. (Ottawa) • **Jean-Jacques Van Vlasselaer**, Cert. Paed. (Antwerp), M.A. (Ottawa)

#### Assistant Professor

**Dominique Rosse**, L. ès L. (Rheims), M.A., Ph.D. (Ottawa)

#### Instructors

**Vincent Basseville**, B.A. (Carleton), M.A. (Ottawa) • **Corinne Cordier-Gauthier**, Licence (Paris-Nanterre), M.A. (Paris-Sorbonne), D.E.A. (Montpellier) • **Chantal Dion**, B.A. (Sherbrooke), M.A. (Ottawa) • **Lynda Dupuis**, B.A., B.Ed., M.A. (Ottawa) • **Nandini Sarma**, B.A. (Carleton), M.A. (Montréal) • **Christiane Thérien**, B.A., M.A. (Ottawa) • **Brigitte Vincent-Smith**, Licence, Maîtrise (Université de Savoie)

#### Adjunct Research Professors

**A. Elbaz** • **M. Gauvin** • **P. Laurette** • **E. Zimmerman**

#### Adjunct Professors

**H.P. Clive** • **O. Condemine** • **J. Miquet** • **J.S. Tassie** • **P. van Ruten**

#### Sessional Lecturers

**M. Conway** • **M. Haché** • **C. Morasse** • **M. Peters** • **M.-A. Rousseau-Beecher** • **M. Veilleux-Sukunda**

### General Information

Carleton University is situated in the bilingual community of Ottawa-Hull and students are encouraged to take advantage of the multiple opportunities for the use of the French language. Theatre, film, radio, television, the press, conversations with people from all walks of life, French-language libraries and bookstores are at hand to supplement academic programs. Classes are conducted in French unless otherwise indicated. The Department has at its disposal a language laboratory, audio-visual, multi-media and Internet equipment for use in language, literature, linguistics and translation classes. Updated information on programs and activities is available on the internet at: <http://www.carleton.ca> under the menu items Faculty of Arts and Social Sciences and French (<http://www.carleton.ca/french/Fre.homepage.html>).

English-speaking students who wish to graduate with a B.A. are normally required to pass an oral examination testing their proficiency in spoken French. The examination takes place at the beginning of the final year with the option of repeating it at the end of the same academic year.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) all Faculty regulations, including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements as set out below.



## Student Exchanges

The Department of French has two student exchanges, one with the *Université du Québec* in Trois-Rivières, and the other with the *Université de Savoie* in Chambéry, France. These exchanges make it possible for a maximum of four Honours students, normally English-speaking, two of whom go to Québec and two to France, to spend their Third year in an immersion milieu. Financial assistance is also available. For more information please consult the Department.

## B.A. (Honours) Programs

Two patterns are available in the Honours program, one focusing on literary studies, the other on French linguistics. Course patterns are designed to ensure an appreciation of French and French-Canadian language, literature, and competence in the French language. Interested candidates will note the general regulations governing Honours (see p. 436).

### B.A. (Honours) in French

Both patterns in Honours French share compulsory core courses:

1. 1.0 credit chosen from French 20.145 or 01.117 OR 20.160 or 01.108;
2. 1.0 credit chosen from French 20.245 or 20.260;
3. French 20.270, 20.280 and 20.286;
4. French 20.360;

AND

(for the French Literary Studies pattern:)

5. French 20.370★, 20.371★, 20.372★ and 20.373★;
6. French 20.470★, 20.471★, 20.472★ and 20.473★;

OR

(for the French Linguistics Studies pattern:)

7. 2.0 chosen credits from French 20.380★, 20.381★, 20.382★, 20.383★ and 20.386;
8. 2.0 credits chosen from French 20.480★, 20.481★, 20.482★, 20.483★ and 20.486.

### Combined B.A. (Honours)

Combined Honours programs are available in French and other disciplines in arts or social sciences.

The Honours programs combining two languages prepare the student either for graduate work or for the Ontario College of Education courses leading to the Interim High School Assistant's Certificate Type A, and must be planned in close consultation with the departments concerned. The combined programs with History or Political Science are suited for various kinds of public careers.

Both patterns of the Combined B.A. (Honours) in French, normally consisting of 7.0 credits, share core course selections as below:

1. One of French 20.145 or 01.117 OR 20.160 or 01.108;
2. One of French 20.245 or 20.260;
3. French 20.270;
4. French 20.280;

AND

(for the French Literary pattern:)

5. 3.0 credits including at least one at the 400-level chosen from 20.370★, 20.371★, 20.372★, 20.373★ and from 20.470★, 20.471★, 20.472★, 20.473★;

OR

(for the French Linguistics Studies pattern:)

6. 3.0 credits including at least one at the 400-level chosen from 20.380★, 20.381★, 20.382★, 20.383★ and from 20.480★, 20.481★, 20.482★, 20.483★.

For the Literary Studies patterns in either B.A. (Honours) or Combined B.A. (Honours), at least 1.0 credit in French literature (from France) must be obtained and at least 1.0 credit in French-Canadian literature

### Combined Honours in French and Journalism for the B.J. Degree

The course requirements are as follows:

1. One of French 20.145 or 01.117 OR 20.160 or 01.108;
2. One of French 20.245 or 20.260;
3. French 20.270;
4. French 20.360;
5. 2.0 further French credits at the 300-level;
6. 1.0 further French credit at the 400-level.

Students should also consult the School of Journalism and Communication.

## B.A. Programs

### B.A. in French

The following program will help students to consolidate their knowledge of French, and to gain a comprehensive view of various aspects of French, French-Canadian and Francophone literature as well as French linguistics. This program consists of 6.0 credits in French.

1. One of French 20.145 or 01.117 OR 20.160 or 01.108;
2. One of French 20.245 or 20.260
3. French 20.270
4. French 20.280
5. French 20.360

6. 1.0 credit chosen from either 20.370★ to 20.373★ or from 20.380★ to 20.383★.

### Combined B.A.

Combined B.A. programs are available in French and other disciplines in arts or social science.

This program consists of 5.0 credits in French.

1. One of French 20.145 or 01.117 OR 20.160 or 01.108;
2. One of French 20.245 or 20.260
3. French 20.270
4. French 20.280
5. French 20.360

### Minor in French

A minor is made up of 4.0 credits in French and is an attractive option for students in disciplines other than French. The Minor consists of 2.0 compulsory credits (20.145 or 01.117 and 20.245 OR 20.160 or 01.108 and 20.260) and 2.0 elective credits that allow students to acquire a grounding in a specific area such as:

Literature (20.270, 1.0 credit chosen from 20.370★ to 20.373★);  
French linguistics (20.280, 1.0 credit chosen from 20.380★ to 20.383★);

Translation (20.286, 20.386);

French language (20.270 or 20.280; 20.360).

Other elective courses can be chosen with the approval of the Department.

## Certificate in French Language Studies

A 6.0-credit undergraduate certificate designed for both part-time and full-time students wishing to perfect their spoken and written French. Students may also earn the Certificate as part of an B.A. (Honours) in French, or as part of a Combined B.A. (Honours) in French and another discipline.

### Course Requirements

6.0 credits in French consisting of:

1. two credits from French 20.145 or 01.117 and 20.245 OR 20.160 or 01.108 and 20.260;
2. French 20.280, 20.286 and 20.360;
3. 1.0 credit from French 20.380★ to 20.383★ or French 20.480★ to 20.483★;

For candidates with knowledge of French to the level of French 20.160 or 01.108:

1. French 20.260, 20.280, 20.286, 20.360;
2. French 20.386 or 20.486;
3. 1.0 credit from French 20.380★ to 20.383★ or French 20.480★ to 20.483★.

Students are not permitted to count the same course(s) towards both certificates offered by the Department of French. Should any student undertake a second certificate, appropriate course substitutions will be required.

### Admission Requirements

(See p. 21.)

## Certificate in French Translation Studies

A 6.0-credit undergraduate certificate designed for both part-time and full-time students wishing to improve their skills in translation. While it is not a professional program, this certificate should meet the needs of those who are occasionally called upon to translate in their work environment. Students may also earn the Certificate as part of a B.A.(Honours) in French, or as part of a Combined B.A.(Honours) in French and another discipline.

### Course Requirements

6.0 credits consisting of:

1. One of French 20.145 or 01.117 OR 20.160 or 01.108 or, with the approval of the Department, a course given in French in another subject
2. French 20.286
3. French 20.360
4. French 20.386
5. French 20.486
6. French 20.487

Students are not permitted to count the same course(s) towards both certificates offered by the Department of French. Should any student undertake a second certificate, appropriate course substitutions will be required.

### Admission Requirements

(See p. 21.)

## Graduate Program

The Department offers studies leading to the M.A. degree. The Department offers a substantial number of courses in a wide variety of subjects. For further information please consult the *Graduate Studies and Research Calendar*.

## Graduate Courses Open to Undergraduates

(With permission of the Department)

### French

- 20.502★ Linguistique du français I
- 20.503★ Linguistique du français II
- 20.504★ Linguistique du français canadien
- 20.506★ Linguistique du français langue seconde
- 20.507★ Traduction: théorie et pratique
- 20.542★ Littérature et rhétorique
- 20.546★ Genres I
- 20.547★ Genres II
- 20.548★ Littérature française I
- 20.550★ Littérature canadienne-française I

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### French Placement for Language Students

Students who have not previously taken a language course in the Department and who wish to enrol in French 20.107, 20.145 or 01.117, 20.160 or 01.108, 20.245, 20.260 must read and follow the guidelines for choosing French language courses that can be found in the *Registration Instructions and Class Schedule* booklet and follow the instructions of the Touch Tone Registration System. Before selecting a language course, students should note that there are three levels in the language courses and the following sequence applies:

Level 1: 20.107

Level 2: 20.145 or 01.117 OR 20.160 or 01.108

Level 3: 20.245 or 20.260

Students cannot go backward in the sequence of levels. Students should also note that 20.106 can be taken simultaneously with 20.107.

**Note:** Students desiring a First-year French credit to satisfy the language requirement of their department or school should consult that department or school.

First Year Seminar in French 01.108

### French III

See course description on p. 84.

First Year Seminar in French 01.117

### French II

See course description on p. 84.

French 20.106

### Reading French

Enable students from other departments to read academic texts in French from various fields with reasonable ease. Basic French grammar and vocabulary. Individual reading in the student's specialization. Given in English. Open to beginners.

Prerequisite: Registration by permission of the Department.

Lecture plus discussion three hours a week.

French 20.107

### French I

Oral expression and comprehension as well as the development of reading and writing skills. Compulsory attendance. Limited enrolment. No auditors.

Precludes additional credit for French 20.120 and 20.130.

Prerequisite: French Placement.

Lecture three hours a week.

French 20.145

### French II

Enrichment of written and oral skills. Texts from various cultural areas to reinforce language skills. Compulsory attendance. Limited enrolment. No auditors.



Precludes additional credit for French 01.108, 01.117, 20.140, 20.150 and 20.160.

Prerequisite: French 20.107 or French Placement.

Lecture three hours a week.

French 20.160

### French III

Enrichment of written and oral skills. Texts from the areas of literature and culture to reinforce language skills. Compulsory attendance. Limited enrolment. No auditors. At least one section of this course is reserved for francophone and bilingual students.

Precludes additional credit for French 01.108, 20.140 and 20.150.

Prerequisite: OAC in French or French Placement.

Lecture three hours a week.

French 20.245

### Techniques d'expression écrite et orale I

Composition française. Perfectionnement du français oral. Enrichissement du vocabulaire, perfectionnement grammatical, lecture de textes littéraires, culturels et spécialisés.

Precludes additional credit for French 20.209, 20.211 and 20.212.

Prerequisite: French 01.117 or 20.145 or permission of the Department.

Lecture three hours a week.

French 20.260

### Techniques d'expression écrite et orale II

Composition française. Perfectionnement du français oral. Enrichissement du vocabulaire, perfectionnement grammatical, lecture de textes littéraires, culturels et spécialisés. At least one section of this course is reserved for francophone and bilingual students.

Precludes additional credit for French 20.211 and 20.212.

Prerequisite: French 01.108 or 20.160 or permission of the Department.

Lecture three hours a week.

French 20.270

### Introduction à la littérature française

Initiation aux valeurs, aux procédés et aux genres littéraires. Introduction aux diverses approches critiques. Textes choisis parmi les grands textes des littératures française, québécoise et canadienne-française.

Precludes additional credit for French 20.161, 20.162 and 20.163.

Prerequisite: French 01.108, 01.117, 20.145, 20.160 or permission of the Department.

Lecture three hours a week.

French 20.271

### Civilization and Culture

The culture, institutions and the intellectual and political life of the Francophonie. Given in English, this course is designed for students interested in the vitality and the diversity of French cultures. Does not count as part of the specific requirements for a B.A. (Honours) or B.A. degree in French. No Auditors.

Prerequisite: Permission of the Department.

Lectures three hours a week.

French 20.280

### Introduction à la linguistique du français

Initiation aux principes et méthodes d'analyse linguistique. Application de ces éléments à la description et à l'analyse du français.

Precludes additional credit for French 20.232★ and 20.233★.

Prerequisite: French 20.145 or French 20.160; or permission of the Department.

Lectures three hours a week.

French 20.286

### Initiation à la traduction

Comparaisons d'ordre grammatical, lexical et stylistique entre l'anglais et le français. Exercices de traduction de l'anglais au français visant l'expression et exercices de traduction du français à l'anglais visant la compréhension.

Precludes additional credit for French 20.231.

Prerequisite: French 01.108, 01.117, 20.145, 20.160; or permission of the Department.

Lecture three hours a week.

French 20.360

### Français écrit et oral

Cours de langue avancé. Commun aux anglophones et aux francophones.

Prerequisite: French 20.245 or French 20.260; or permission of the Department.

Lecture three hours a week.

French 20.370★

### Littérature française I

Principaux courants de la littérature française du Moyen Âge au XVII<sup>e</sup> siècle. Étude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Precludes additional credit for French 20.261★, 20.262★ and 20.263★.

Prerequisite: French 20.270 or permission of the Department.

Lecture three hours a week.

French 20.371★

### Littérature française II

Principaux courants de la littérature française du XVIII<sup>e</sup> au XX<sup>e</sup> siècle. Étude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Precludes additional credit for French 20.264★, 20.265★ and 20.266★.

Prerequisite: French 20.270 or permission of the Department.

Lecture three hours a week.

French 20.372★

### Littérature québécoise, acadienne et canadienne-française

Principaux courants de la littérature québécoise, acadienne et canadienne-française de la Nouvelle-France à aujourd'hui. Étude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Precludes additional credit for French 20.267★ and 20.268★.

Prerequisite: French 20.270 or permission of the Department.

Lecture three hours a week.

French 20.373★

### Littératures francophones

Principaux courants des littératures francophones (africaine, belge, caraïbéenne, suisse). Étude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Prerequisite: French 20.270 or permission of the Department.

Lecture three hours a week.

French 20.380★

### Histoire de la langue française

Étude de l'évolution de la prononciation, de la grammaire et du vocabulaire français, des origines à nos jours.

Prerequisite: French 20.280 or permission of the Department.

Lecture three hours a week.

French 20.381★

### Morphologie et syntaxe du français

Étude linguistique des structures du mot et de la phrase. Approches descriptives et théoriques.

Precludes additional credit for French 20.312.

Prerequisite: French 20.280 or permission of the Department.

Lecture three hours a week.

French 20.382★

### Sémantique et lexicologie du français

Étude linguistique du sens et de la structure du vocabulaire français. Sémantique de la phrase et du discours.

Prerequisite: French 20.280 or permission of the Department.

Lecture three hours a week.

French 20.383★

### Français canadien

Étude des particularités du français parlé et écrit au Canada. Approches descriptives et sociolinguistiques.

Precludes additional credit for French 20.332.

Prerequisite: French 20.280 or permission of the Department.

Lecture three hours a week.

French 20.386

**Principes et méthodes de la traduction**

Initiation aux principes sous-jacents à la traduction en particulier de l'anglais au français. Exercices pratiques s'appliquant à des textes généraux ou spécialisés (scientifiques, administratifs, commerciaux, etc.)

Precludes additional credit for French 20.331.

Prerequisite: French 20.286 or permission of the Department.

Lecture three hours a week.

French 20.470★

**Aspects de la littérature française I**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: Étude comparative entre le théâtre classique et romantique dans une perspective formelle. Analyse détaillée des composantes du vers, des procédés de répétition chez Corneille, Racine, Vigny et Hugo.

Prerequisite: French 20.270 or permission of the Department.

Seminar two hours a week.

French 20.471★

**Aspects de la littérature française II**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: Méthodologie et littérature. Introduction à la rhétorique. Lectures rhétoriques de textes français divers.

Prerequisite: French 20.270 or permission of the Department.

Seminar two hours a week.

French 20.472★

**Aspects de la littérature québécoise ou canadienne-française**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: La tradition autobiographique dans la littérature québécoise. Stratégies narratives analysées et mises en rapport avec des facteurs culturels tels que la nationalité, la classe sociale, la différence sexuelle chez Conan, Gameau, Roy, Tremblay, Renaud, Aquin et Théoret.

Prerequisite: French 20.270 or permission of the Department.

Seminar two hours a week.

French 20.473★

**Littératures et cultures de la francophonie**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: production théâtrale, dramaturgique et scénique des créateurs francophones de la Guadeloupe, d'Haïti, du Québec et de la France.

Precludes additional credit for French 20.471★.

Prerequisite: French 20.270 or permission of the Department.

Seminar two hours a week.

French 20.480★

**Aspects de la linguistique du français I**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: francophonie contemporaine. Sociolinguistique et évolution historique des français.

Prerequisite: French 20.280 and Fourth-year standing in Honours French; or permission of the Department.

Seminar two hours a week.

French 20.481★

**Aspects de la linguistique du français II**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: la compétence sémantique. Étude de cas concrets comme les quantificateurs, les diminutifs, etc.. Aspects universels. L'univers conceptuel et culturel du français.

Prerequisite: French 20.280 and Fourth-year standing in Honours French; or permission of the Department.

Seminar two hours a week.

French 20.482★

**Aspects de la linguistique du français III**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: grammaire et communication. Types de connaissance grammaticale; descriptions, modèles, pratiques. Apprentissage de la communication. Grammaires descriptives, grammaires pédagogiques et grammaires d'apprentissage. Liens et lieux de rencontre entre ces grammaires. Mise en pratique.

Prerequisite: French 20.280 or permission of the Department.

Seminar two hours a week.

French 20.483★

**Aspects de la linguistique du français IV**

Le contenu précis de ce cours varie selon les années. Sujet pour 1998-99: linguistique contrastive. Analyse, à la lumière de la linguistique, des principales différences entre le français et l'anglais au niveau de la grammaire. Langue parlée et langue écrite. Étude de corpus parallèles et de traductions.

Prerequisite: French 20.280 or permission of the Department.

Seminar two hours a week.

French 20.486

**Traduction littéraire**

Traduction de l'anglais au français et du français à l'anglais de textes littéraires. Analyses de traductions déjà parues. Retraduction. Precludes additional credit for French 20.431.

Prerequisite: French 20.286 or permission of the Department.

Seminar two hours a week.

French 20.487★

**Tutorial**

Special Topics in Linguistics, Literature or Translation under the supervision of a faculty member.

Prerequisite: Permission of the Department.

Hours to be determined.

French 20.488★

**Tutorial**

Special Topics in Linguistics, Literature or Translation under the supervision of a faculty member.

Prerequisite: Permission of the Department.

Hours to be determined.



# Geography

## (Arts and Social Sciences/Science)

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Supervisor of B.Sc. Studies, Chris Burn

Supervisor of Graduate Studies, David Bennett

### Teaching Staff

#### Professors

**John Clarke**, B.A. (*Queen's of Belfast*), M.A. (*Manitoba*), Ph.D. (*Western Ontario*) • **Fiona D. Mackenzie**, B.A. (*London*), M.A. (*Carleton*), Ph.D. (*Ottawa*) • **Michael W. Smith**, B.Sc. (*Liverpool*), M.A. (*Georgia*), Ph.D. (*British Columbia*) • **Fraser D.R. Taylor**, M.A. (*Edinburgh*), P.G.C.E. (*London*), Ph.D. (*Edinburgh*) • **J. Kenneth Torrance**, B.S.A. (*Guelph*), M.S., Ph.D. (*Cornell*) • **Iain Wallace**, B.A., Ph.D. (*Oxford*)

#### Associate Professors

**David Bennett**, B.A., Ph.D. (*Liverpool*) • **Michael Brklacich**, B.Sc. (*Trent*), M.A. (*Guelph*), Ph.D. (*Waterloo*) • **Chris Burn**, B.Sc. (*Durham*), M.A., Ph.D. (*Carleton*) • **S. Dalby**, B.A. (*Trinity College*), M.A. (*Victoria*), Ph.D. (*Simon Fraser*) • **Michael Fox**, B.A. (*Sheffield*), M.A. (*Carleton*) • **Douglas J. King**, B.A.Sc., M.Sc.F., Ph.D. (*Toronto*) • **Fran Klodawsky**, B.A. (*Toronto*) M.A. (*Ohio State*), Ph.D. (*Queens*) • **Suzanne Mackenzie**, B.A. (*Simon Fraser*), M.A. (*Toronto*), D.Phil. (*Sussex*) • **Shelagh J. Squire**, B.A. (*Winnipeg*), M.A. (*Carleton*), Ph.D. (*London*) • **John E. Tunbridge**, B.A., M.A. (*Cambridge*), Ph.D. (*Bristol*) • **Thomas P. Wilkinson**, B.Sc. (*Durham*), Ph.D. (*Newcastle-upon-Tyne*)

#### Assistant Professors

**Joyce Lundberg**, B.Sc. (*Trinity College*), M.Sc. (*Australian National*), Ph.D. (*McMaster*) • **Gennady Ozornoy**, M.A. (*Leningrad State University, Alberta*), Ph.D. (*Leningrad Institute of Finance and Economics, Toronto*)

#### Lecturer

**Nancy Doubleday**, B.Sc. (*Brock*), B.Ed. (*Toronto*), LL.B., M.E.S. (*York*) of the Bar of Ontario

#### Instructors

**Christine E. Earl**, B.Sc. (*Western*) • **Danny Patterson**, B.A., M.A. (*Carleton*) • **Steve Prashker**, B.Sc., M.Sc. (*McGill*)

#### Geoprocessing Analyst

**Steve Prashker**

#### Cartographer

**Christine E. Earl**

#### Honorary Research Professor

**Jack D. Ives**

#### Distinguished Research Professor

**Peter J. Williams**

#### Adjunct Research Professors

**F. Ahern** • **R. Bollman** • **V. Jefremovas** • **V. Konrad** • **E.W. Manning** • **J. Marshall** • **A. Rencz** • **A. Spector** • **I.C. Taylor** • **T.L. White**

#### Adjunct Professor

**P. Johnson**

## General Information

The Department of Geography and Environmental Studies has programs of study leading to the following degrees in Geography: B.A. (Honours), B.Sc. (Honours), B.A., M.A., and Ph.D. A concentration in Geographic Information Processing (GIP) is available under both the B.A. (Honours) and B.Sc. (Honours) programs. The undergraduate programs in Geography provide a foundation for understanding the world from human and biophysical perspectives with a particular focus on Geography's unique role for evaluating change at local, regional, national and global scales. There is opportunity to develop expertise in one of the following geographic themes: Culture, Society and Space; The Physical Environment; Societal and Environmental Change; and Geographic Information Processing.

It is also possible to complete joint B.A. (Honours) and B.A. programs between Geography and many disciplines in Arts and Social Sciences and Public Affairs and Management, including Law, Economics, History, Anthropology, Psychology, Political Science, Canadian Studies, Sociology, Journalism and Biology. There is also a Combined Honours Geography and Biology program. Even without the formality of a Combined program it is possible for those pursuing a single B.A. or Honours program in Geography to develop a subsidiary thematic or regional concentration by taking a variety of non-geography electives. Please contact the Department of Geography and Environmental Studies for information about these possibilities.

## Graduation Regulations

In order to graduate, B.Sc. students must fulfill all University graduation regulations (see p. 49) and all Faculty regulations (see p. 117). B.A. students must fulfill all University graduation regulations (see p. 49) and all Faculty regulations (see p. 72) including those for First-Year Seminars and Breadth courses. In addition, all departmental regulations as set out below must also be fulfilled.

## B.A. Programs in Geography

### B.A. (Honours) Program

The B.A. (Honours) program in Geography is offered for students who wish to prepare for graduate study, a career in planning, government, business, or other specialization in which the field of geography offers the appropriate training. Information on recommended patterns of courses related to various interests is available from the department. There is substantial freedom in the program for students to take courses of special interest in the University, as well as courses in geography and related disciplines.

A formal concentration is offered in Geographic Information Processing for students who wish to focus on the acquisition, management, display and use of geographic information. Students will be involved with microcomputer-based techniques of data management and display and with various applications in planning, environmental and resources management, and demographics.

Students reading for a B.A. (Honours) degree must satisfy the general Faculty regulations for Honours (p. 78). Fourth-year Honours students may take 0.5 credit listed in the *Graduate Studies and Research Calendar* only if they have a GPA of 9.0 in Geography and permission of the Department.

### B.A. (Honours) in Geography

Students admitted to the B.A. (Honours) Geography program are required to complete the equivalent of 20.0 credits beyond the OSSD or Qualifying-University year in Arts or Social Sciences. At least 10.0 credits and not more than 12.0 credits must be in Geography, and must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;

2. Geography 45.205★, 45.206★, 45.210★ (or 45.211★), 45.220★, and 45.230★;

3. Geography 45.300★ (or other approved field course) and 45.390★

4. Either (i) Geography 45.498 or (ii) 45.499;

5. At least 4.5 additional Geography credits above the 100-level of which at least 2.0 must be at the 300-level and at least 2.0 must be at the 400-level.

### Combined B.A. (Honours)

The maximum number of credits allowed in the two subjects specified in a Combined B.A. (Honours) program is 15.0. Students taking Combined Honours in Geography and another subject are required to complete the equivalent of at least 7.0 credits and not more than 8.0 credits in Geography, which must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;

2. One of Geography 45.210★ or 45.211★ and one of 45.220★ or 45.230★;

3. Geography 45.205★, 45.206★, and 45.390★.

4. At least 2.5 additional Geography credits above the 100-level, 1.5 at the 300-level and 1.0 at the 400-level.

5. Either (i) Geography 45.498 or Geography 45.499 or (ii) an Honours research essay or equivalent in the other Honours department and an additional Geography credit at the 400-level. (If the other department does not offer an Honours research essay or equivalent research experience students must take either Geography 45.498 or 45.499).

### B.A. Combined Honours in Biology and Geography

For Geography requirements see above; for Biology requirements see p. 155. Students must contact both departments for advice.

### B.A. (Honours) in Geography with a Concentration in Geographic Information Processing (GIP)

This is a limited enrolment concentration. Admission to the concentration is by application through the Department of Geography. The deadline for application is June 1 for September admission. Students from other institutions should consult the admissions section of this Calendar for deadlines and procedures. (See p. 41.)

To be considered for admission to the concentration, students must:

1. Satisfy the requirements for admission to, or continuation in, the Honours program in Geography, and all Faculty regulations pertaining to Honours programs (See p. 78.);

2. Have completed at least 3.0 credits in Geography, including at least 1.0 credit from the GIP core courses listed below. A GPA of 6.5 or better must be attained in the GIP course(s).

Admissibility to the concentration is determined by calculating the simple average of the GPA achieved in the GIP core course(s) completed at the time of application and the GPA achieved on all completed Geography courses.

Admission will be determined according to descending order of simple average attained, until the full complement of places available, on an annual basis, has been filled. Students from either B.A. or B.Sc. Honours programs may apply to the Concentration. A maximum of fifteen will be admitted.

To continue in the concentration, a GPA of 6.5 or better is required in the GIP core courses.

To graduate in the concentration, candidates must achieve a GPA of 6.5 or better in the GIP core courses, in addition to the GPA in Geography and the CI required for graduation with Honours. The graduation average in Geography shall be calculated over all successfully completed, graded courses used to meet the minimum



requirements of the degree program and counting towards the degree.

At least 10.0 credits and not more than 12.0 must be in Geography, and must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. Geography 45.210★ or 45.211★; 45.220★ or 45.230★;
3. 6.0 credits in Geographic Information Processing as follows:  
45.205★, 45.206★, 45.207★, 45.302★, 45.303★, 45.304, 45.307★,

45.403★, 45.406★, 45.408★, 45.446★ or 45.448★ (with placement in a GIP-related setting);

4. 0.5 additional credit in Geography at the 200-level or higher;

5. 0.5 in Geography at the 300-level or higher;

6. Geography 45.498 or 45.499, with an emphasis on the nature and/or use of Geographic Information Processing.

### Undergraduate Courses in Geography

45.101 Geoscience    45.101 Geography/ Environment    45.102★ World Issues I    45.103★ World Issues II				<b>First year Seminars:</b> 01.109 Maps and Mapping; 01.110 It's Your Environment; 01.111 Location is Everything
PHYSICAL ENVIRONMENT	GEOGRAPHIC INFORMATION PROCESSING	CULTURE, SOCIETY, SOCIETAL CHANGE	REGIONAL AND INTEGRATIVE COURSES	
45.210★The Physical Environment 45.211★Environmental Geography	45.205★Research 45.206★Statistics 45.207★Geographic Information Systems	45.220★Global Economy 45.230★Culture, Society 45.231★Political	45.255★Canada	
45.311★Biophysical 45.312★Geomorphology 45.313★Hydrology 45.315★Climatology 45.318★Soils 45.319★Soils	45.302★Air Photos 45.303★Quantitative Methods 45.304Geospatial Analysis 45.307★Cartographic Theory	45.320★Canadian City 45.329★Sustainability and Environment 45.335Historical 45.336★Resource Analysis 45.337★Political 45.344★Economic Restructuring 45.370★Population	45.300★Honours Field Course 45.301★Social Geography Methods 45.330★Sub-Saharan Africa 45.351★Northern Lands 45.360★Soviet Union Successor States 45.361★Eastern Europe 45.362★Southern Africa 45.390★Geographic Thought/ Methodology 45.395★Selected Region	
45.404★Environmental Assessment 45.405★Directed Studies 45.411★Quaternary 45.412★Terrain Analysis 45.413★Hydrology 45.414★Microclimatology 45.417★Soil Mechanics 45.418★Permafrost	45.403★Remote Sensing 43.405★Directed Studies 45.406★Computer Cartography 45.408★Advanced Topics in GIS 45.446★Practicum I 45.448★Practicum II	45.404★Environmental Assessment 45.405★Directed Studies 45.423★Urban Revitalization 45.425★Space, Place, Well-being 45.426★Health, Environ- ment, Society 45.427★Urban Development 45.430★Environmental Movements 45.431★Cultural 45.433★Urban Planning 45.434★Transport 45.435★Historical 45.440★Political 45.442★Transport 45.443★Applied Economic 45.445★Rural Land Use 45.447★Canadian Agriculture 45.460★Post-Communist Societies	45.400★Field Studies 45.405★Directed Studies 45.446★Practicum I 45.448★Practicum II 45.496Honours Research Project 45.498Honours Research Workshop 45.499Honours Research Essay	

★ denotes half-credit, usually given in one term.

## B.A. Program

This program is offered for students who wish a liberal arts education with emphasis in geography. Guidance on patterns of courses for particular interests is available from the Department.

Students admitted to the B.A. program in Geography are required to complete the equivalent of at least 7.0 credits and not more than 8.0 credits in Geography, which must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. Geography 45.205★, 45.210★ (or 45.211★), 45.220★, 45.230★;
3. At least 4.0 additional Geography credits above the 100-level, of which at least 2.5 must be at the 300- or 400-level.

## Combined B.A. Programs

Students admitted to a Combined B.A. program in Geography and another department are required to complete the equivalent of at least 5.0 credits and normally not more than 7.0 credits in Geography, which must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. One of Geography 45.210★ or 45.211★, and one of 45.220★, or 45.230★;
3. At least 3.0 additional Geography credits above the 100-level; of which at least 1.5 must be at the 300- or 400-level.

## B.Sc. Programs in Geography

### B.Sc. (Honours) Program

The Bachelor of Science (Honours) is offered in two concentrations, Physical Geography and Geographic Information Processing. The program consists of 20.0 credits beyond the OSSD or Qualifying-University Year Science, selected in a pattern approved by the Supervisor of the B.Sc. Honours Studies in the Department of Geography and Environmental Studies, and consistent with the following requirements:

#### B.Sc. (Honours) Program Requirements

1. 8.0 credits in Geography selected from the list below, of which at least 2.0 credits must be at the 400-level.
  - (a) For the Honours Physical Geography program, these must include Geography 45.105, 45.210★, 45.311★, 45.312★, 45.313★, 45.315★ and 45.318★.
  - (b) For the Geographic Information Processing (GIP) concentration these must include 45.105, 45.205★, 45.206★, 45.207★, 45.302★, 45.303★, 45.304, 45.307★, 45.403★, 45.406★, 45.408★.
- In special cases students may take an appropriate graduate course in their fourth year, with permission of the Supervisor of Graduate Studies.
2. 45.496 Honours Project. For students in the GIP concentration, the project must have an emphasis on the nature and or use of geographic information processing.
  3. (a) The remaining 11.0 credits for the Honours Physical Geography concentration must include:

- (i) 1.0 approved credit in Biology, Chemistry or Physics.
- (ii) 69.107★ and a 0.5 credit in Mathematics and/or Computer Science.
- (iii) 2.0 approved credits in Science, not in Geography, beyond the 100-level.
- (iv) 2.0 approved credits in Science, Computer Science or Engineering.
- (v) 2.0 arts or social science credits, 1.0 of which must be an approved credit not in geography.
- (vi) 3.0 free electives.

(b) The remaining 11.0 credits for the Geographic Information Processing concentration must include:

- (i) 1.0 approved credit in Biology, Chemistry or Physics.
- (ii) 2.0 approved credits Computer Science.
- (iii) 2.0 approved credits in Science, not in Geography, beyond the 100-level.
- (iv) 1.0 approved credit in Science, Computer Science or Engineering.
- (v) 2.0 arts or social science credits, 1.0 of which must be an approved credit not in Geography.
- (vi) 3.0 free electives.

### Physical Geography and Geographic Information Processing Courses

45.105, 45.205★, 45.206★, 45.207★, 45.210★, 45.211★, 45.300★, 45.302★, 45.303★, 45.304, 45.307★, 45.311★, 45.312★, 45.313★, 45.315★, 45.318★, 45.319★, 45.400★, 45.403★, 45.404★, 45.405★, 45.406★, 45.408★, 45.411★, 45.412★, 45.413★, 45.414★, 45.417★, 45.418★, 45.446★, 45.448★

**Note:** The Concentration in Geographic Information Processing has a limited enrolment. Procedures for application to the concentration and criteria for entry into, continuation in, and graduation from the concentration are the same as those for the B.A. Program - see p. 259.

### Combined Honours B.Sc. in Biology and Physical Geography

Program advisers are Lenore Fahrig and C.R. Burn.

Students desiring a comprehensive basic education in both Biology and Physical Geography may apply to a Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program. Course requirements of the Combined Honours B.Sc. program are as follows:

1. Biology 61.103★ and 61.104★, Geography 45.105, Mathematics 69.107★ and 69.117★ or 69.257★, Chemistry 65.100.
2. 2.0 optional arts or social science credits. 1.0 credit in Geography, other than the Physical Geography courses on this page is recommended.
3. 1.0 additional Science credit from the list on p. 118 (Physics 75.101★ and 75.102★, or 75.107★ and 75.108★ is required unless OAC Physics is presented as an entrance credit).
4. 1.0 free option credit (unless Biology 61.102 is taken in lieu of the OAC in Biology. See Biology program for entry with and without OAC in Biology).
5. 10.0 credits in Biology (or Biochemistry) and Physical Geography (see preceding list of courses) beyond First-year level, including at least 0.5 credit involving a field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 may be at the 200-level.
6. 1.0 additional credit in Science or Computer Science above the 100-level, not in Biology or Geography and chosen in consultation with the students program adviser.
7. Biology 61.498 (requires 61.491★ as a prerequisite, or may be taken concurrently), or Geography 45.496.

### Combined Honours B.Sc. in Geology and Physical Geography

Program advisers are F. Michel and C.R. Burn.

A grade of C+ or better in Geography 45.105/Geology 67.105† and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Geography 45.105 or Geology 67.105†, Chemistry 65.100, Mathematics 69.107★ and 69.117★ and Physics 75.101★ and 75.102★, or 75.107★ and 75.108★;



2. 5.0 credits in Geology beyond First-year level, including Geology 67.223★, 67.225★, 67.228★, 67.285★††, 2.0 credits in Geology at the 300-level or above, and 1.0 credit in Geology at the 400-level.

3. 5.0 credits in Physical Geography beyond First-year level from list on p. 261, to include: Geography 45.210★, 1.5 credits in Physical Geography at the 200-level or above, Geography 45.302★, 45.312★, 45.315★, 45.318★ and 1.0 credit in Physical Geography at the 400-level;

4. Geography 45.496 or Geology 67.498;

5. 1.0 credit in Mathematics beyond First-year level and/or Computer Science. (Mathematics 69.257★ and Computer Science 95.104★ are recommended.)

6. 2.0 arts or social science elective credits†††;

7. 2.0 credits chosen from arts, social science, Science or Engineering.

† Students who have taken Geology 67.100 may substitute, with permission of the program advisers, Geology 67.100 for 67.105/45.105.

†† Geology 67.285★

††† A Human Geography course is recommended in the program.

### Combined Honours in Geology and Geography: Concentration in Terrain Science

(Please see entry under Earth Sciences, p. 220).

### Minor in Geography

Students registered in degree programs other than Geography may complete a Minor in Geography. Application for admission to the Minor must be made to the Registrarial Services Office. For the designation "Minor in Geography" to be added to the student's transcript and diploma the requirements below must be met.

At least 4.0 credits in Geography (with a GPA of 4.0 or better) including:

1. 1.0 credit at the 100-level;

2. Geography 45.205★; 45.210★ or 45.211★; 45.220★ or 45.230★;

3. 1.5 credits, including at least 1.0 credit at the 300-level.

### Minor in Geography: Geographic Information Processing (GIP)

Students registered in degree programs other than Geography may obtain a "Minor in Geography: Geographic Information Processing (GIP)".

Application for admission to the Minor must be made through the Department of Geography and Environmental Studies after having completed at least 1.0 credit from the GIP courses listed below with a GPA of 6.5 or better. The deadline for application is June 1 for September admission. For the designation "Minor in Geography: Geographic Information Processing" to be added to the student's transcript and diploma the requirements below must be met.

At least 4.0 credits in GIP (with a GPA of 6.5 or better) including:

1. 45.205★ and 45.206★ (students in Science may substitute Mathematics 69.257★ for 45.206★);

2. Geography 45.207★ and 45.304;

3. 1.5 credits chosen from Geography 45.302★, 45.303★, 45.307★, 45.403★, 45.406★ or 45.408★.

**Note:** Familiarity with computers is assumed but not required. Students with little computer experience may wish to take one of the following courses as part of their program of study: Business 42.142★, Computer Science 95.101★ or 95.104★.

## Graduate Programs

The Department of Geography and Environmental Studies offers graduate programs in human geography, physical geography and geotechnical science. For further details consult the *Graduate Studies and Research Calendar*.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in Geography 01.109

### Maps and Mapping

See course description on p. 84.

First-Year Seminar in Geography 01.110

### It's Your Environment

See course description on p. 84.

First-Year Seminar in Geography 01.111

### Location is Everything

See course description on p. 84.

Geography 45.101

### Geography and the Environment

Human activity and the physical environment and links between them. Social, economic, cultural, and political forces shaping human activity at scales ranging from local to global. Methods of collecting and interpreting geographic information.

Lectures two hours a week and workshops/discussions one hour a week.

Geography 45.102★

### World Issues I: Environment, Resources and Society

Global and regional issues through study of: geographic and environmental traditions; world views; ecosystem structure and function; biodiversity; atmosphere, climate and greenhouse effect; population and demography; food and nutrition; water; soil; agriculture; renewable and non-renewable resources; waste; environmental degradation; sustainability; environmental management and development.

Lectures two hours a week, discussions one hour a week.

Geography 45.103★

### World Issues II: Territory, Culture, and Political Space

Contemporary global and regional issues in which elements of political and cultural geography are central; reference to the local region, Canada, and topical overseas examples; focus on nation-state integration and fragmentation.

Lectures three hours a week.

Geography 45.105

### Introduction to Geoscience

Earth's physical environment; processes operating within the Earth and at its surface: the hydrologic cycle, oceans, earth structure, tectonics, rocks, minerals, history of life on the earth, climatic change, soils, landforms and resources. (Also listed as Geology 67.105.)

Precludes additional credit for Geology 67.100.

Lecture three hours a week, laboratory three hours a week, a field excursion.

Geography 45.205★

### Geographic Research

Nature of primary and secondary sources of geographic data; research questions, processes and ethics; maps and mapping; quantitative and qualitative approaches such as surveys, interviews, participant observation, case studies; information summary and presentation in textual, statistical, graphic, and cartographic form.

Precludes additional credit for Geography 45.204.

Prerequisite: 1.0 credit in Geography at the 100-level and Second-year standing, or permission of the Department.

Lectures two hours a week, laboratory two hours a week.



**Geography 45.206 ★****Geographic Statistics**

Probability; sampling design; estimation; inferential statistics; spatial and temporal statistics.

Precludes additional credit for Geography 45.204, Mathematics 69.257 ★, 69.266 ★, Economics 43.220, Psychology 49.200, Political Science 47.270.

Prerequisite: Geography 45.205 ★ or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.207 ★****An Introduction to Geographic Information Systems**

Data in a spatial context; spatial data structures, georeferencing, data query; mapping; creating spatial databases; selected topics in GIS application to environmental, land-use planning and market analysis issues.

Prerequisite: Geography 45.204, or 45.206 ★ (may be taken concurrently) or permission of the Department. Familiarity with personal computers is assumed.

Workshop three hours a week.

**Geography 45.210 ★****The Physical Environment**

Interactions of climate, hydrology, topography, and soils; thermal, hydrologic, mechanical, and chemical behaviour of earth materials; seasonal variations; geotechnical and environmental implications.

Prerequisite: 1.0 credit in Geography or Science at the 100-level.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.211 ★****Environmental Geography**

Biophysical elements of the environment; human-environment interactions; natural hazards; human response to environmental change and variation; land-use planning and risk management.

Prerequisite: 1.0 credit in Geography at the 100-level, or Second-year standing.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.220 ★****Geography of the Global Economy**

Geography of the global economy and contemporary geopolitical restructuring. Evolution of current patterns of production and international trade; the role of states, firms, and social values in shaping development. Global environment/economy interactions. Effect of location, locality, and distance on economic, social, and political life.

Prerequisite: 1.0 credit in Geography at the 100-level (Geography 45.101 is recommended), or Second-year standing.

Lectures three hours a week.

**Geography 45.230 ★****Culture, Society and Space**

Ways in which individuals and societies create, modify, and interact with environments; social dimensions of landscapes; the culture and politics of space; geographies of identity.

Prerequisite: 1.0 credit in Geography at the 100-level (Geography 45.101 is recommended), or Second-year standing.

Lectures two hours a week, discussion one hour a week.

**Geography 45.231 ★****Conflict and Accord in the Modern World**

The role of cultural, economic, political boundaries and geographical context, with emphasis on popular and media representations of the geography of war and peace in contemporary ethnic, environmental and territorial conflicts, peace-keeping and peace-making.

Prerequisite: 1.0 credit in Geography at the 100-level, or Second-year standing.

Lectures three hours a week.

**Geography 45.255 ★****Canada: Contemporary Geographic Issues**

Analysis and interpretation of Canada, its regions and localities, using a range of geographical concepts; interactions among society, the economy and the environment, and related policy issues.

Precludes additional credit for Geography 45.305 ★ and 45.355 ★.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week, discussion one hour a week.

**Geography 45.300 ★****Honours Field Course**

Geographical techniques of field observation, measurement, recording, and analysis involving work in groups; normally based in the Ottawa region. Development of research skills. A supplementary charge may apply.

Prerequisite: Third-year Honours standing in Geography, or permission of the Department.

A four-day field camp, workshop two hours a week.

**Geography 45.301 ★****Social Geography Methods**

Methods of acquiring, analyzing and presenting primary information relating to contemporary issues in social geography; technical and ethical aspects of such topics as: mental mapping, sampling and questionnaire design, participant observation and interviewing, discourse analysis, and qualitative research methods.

Prerequisite: Geography 45.204 or 45.205 ★.

Lectures two hours a week, discussion group one hour a week.

**Geography 45.302 ★****Air Photo Interpretation and Remote Sensing**

Aerial photography and remote sensing; visual image interpretation of landforms, surface materials, and cultural features; elements of photogrammetry and flight planning; digital multispectral image analysis.

Prerequisite: Third-year standing, or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.303 ★****Quantitative Geography**

Multivariate quantitative methods, such as multiple correlation and regression, factor analysis, cluster analysis, discriminant analysis, and analysis of variance as applied to classification, regionalization, explanation and hypothesis testing in geographical research.

Prerequisite: Geography 45.204 or 45.206 ★, or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.304****Geospatial Analysis**

The acquisition, manipulation, and display of spatially referenced information by means of micro-computers. The principles, design and application of spatial information systems for environmental and socio-economic data bases; concepts of computer-assisted cartography; and the use of micro-computer-based mapping systems.

Prerequisites: Geography 45.204 or 45.207 ★, and Honours standing in Geography.

Lecture one hour a week, practical two hours a week.

**Geography 45.307 ★****Cartographic Theory and Design**

Principles of cartography, cartographic communication and map design; practical work designed to provide experience in solving problems of cartographic representation.

Precludes additional credit for Geography 45.324 ★ and 45.325.

Prerequisite: Geography 45.204 or 45.205 ★, and Third-year standing, or permission of the Department.

Lectures and laboratory three and a half hours a week.

**Geography 45.311 ★****Biophysical Resource Assessment**

The acquisition and interpretation of biophysical information, with regard to defining limitations on the use of the environment; field and laboratory techniques with an emphasis on the biophysical resources of a local area. A supplementary charge may apply.

Prerequisite: One of Geography 45.105/Geology 67.105, 45.210 ★, 45.211 ★ or permission of the Department.

Lectures, laboratory and fieldwork five hours a week.



**Geography 45.312★**

**Geomorphology**

Geomorphological agents of landscape change at the Earth's surface, emphasizing the role of water, ice and wind in erosion and deposition; use of geomorphic indicators in studies of environmental change.

Prerequisites: Geography 45.105/Geology 67.105, or Geography 45.210★ and Third-year standing, or permission of the Department.

Lectures two hours a week, laboratory two hours a week, one field excursion.

**Geography 45.313★**

**Watershed Hydrology**

Principles of hydrology at local and watershed scales, with an emphasis on: soil moisture regimes; field data collection and analysis of surface water or snow and ice conditions; hydrologic processes in cold environments; and regional runoff regimes in Canada. A supplementary charge may apply.

Prerequisite: Geography 45.210★ or 45.211★.

**Note:** First-year mathematics and physics are recommended.

Lectures two hours a week, laboratory three hours a week, two field excursions, including a two-day excursion. Students are responsible for long-distance transportation, food and lodging costs associated with the field excursions.

**Geography 45.315★**

**Climate and Atmospheric Change**

The global climate system, with emphasis on global change variability over the historical and modern periods; the changing composition of the atmosphere and its impact on climate; analysis and interpretation of climatic and atmospheric data; modelling of climate systems.

Prerequisites: Geography 45.206★ or 45.204, and 45.210★; or permission of the Department.

Lecture two hours a week, laboratory two hours a week.

**Geography 45.318★**

**Soil Properties**

The physical and chemical properties of soils; soil-water relationships, weathering processes, soil mineralogy, cation exchange, soil pH. A plant-oriented perspective predominates.

Precludes additional credit for Geography 45.308.

Prerequisite: Geography 45.105, or 45.210★, or permission of the Department.

Lectures and laboratory five hours a week.

**Geography 45.319★**

**Soils and Environment**

The formation and development of soils, soil classification, soil fertility, soils and environmental concerns, land degradation.

Precludes additional credit for Geography 45.308.

Prerequisite: Geography 45.318★ or permission of the Department.

Lectures three hours a week.

**Geography 45.320★**

**The Canadian City: Environment, Structure and Contemporary Problems**

Internal structure of the Western city with specific application to Canadian cities; current urban problems with particular focus on inner city revitalization, peripheral expansion, metropolitan organization and transportation systems and their interaction with land use.

Prerequisite: Geography 45.220★ or permission of the Department.

Lectures three hours a week.

**Geography 45.329★**

**Sustainability and Environment in the South**

A political ecology approach to the concept of sustainability in the South; case studies from Africa, Asia, and Latin America to analyze the relationship between people and the environment at scales ranging from the intra-household and local to the international.

Prerequisite: Third-year standing and Geography 45.220★ or 45.230★ or 45.231★; or permission of the Department.

Lectures two hours a week, discussion groups one hour a week.

**Geography 45.330★**

**Environment and Sustainability in Sub-Saharan Africa**

Historical analysis of contemporary problems faced by selected states in sub-Saharan Africa, focusing on environmental sustainability in the context of political, social and economic change, at scales from the intra-household and local to national.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.335**

**The Development of Canada: The Historical Geographical Perspective**

Canada from pre-history to the present; issues of culture and economy in a geographical context; methodology in historical geography.

Prerequisite: Geography 45.230★ or History 24.233 or 24.234; or permission of the Department.

Lectures three hours a week.

**Geography 45.336★**

**Resource Analysis in Geography**

Human dimensions of resource assessment, use and management; topics relating to resource allocation theory and methods, carrying capacity, environmental and social impact assessment, public participation and resources policies; emphasis on Canadian case studies.

Precludes additional credit for Geography 45.333★ and 45.334★.

Prerequisite: At least Third-year standing in Geography or Environmental Studies or Environmental Science, or permission of the Department.

Lectures and laboratory three hours a week.

**Geography 45.337★**

**Systematic Political Geography**

A survey of classical and contemporary themes in the politics of space, place and boundary making; an introduction to recent political geography theories concerning such themes as social movements, development, environmental security and the role of gender in questions of space and power.

Prerequisite: Geography 45.231★ or permission of the Department.

Lectures three hours a week.

**Geography 45.344★**

**Geography of Economic Restructuring**

The changing geography of production and employment in all sectors of the economy; the impacts of economic restructuring at global, regional and community scales; the role of firms, governments, and households; linkages between developments in different parts of the world.

Precludes additional credit for Geography 45.340★ and 45.341★.

Prerequisite: Geography 45.220★ or Third-year standing and permission of the Department.

Lectures three hours per week.

**Geography 45.351★**

**Northern Lands**

The physical characteristics, historical geography, economic resources, settlement patterns and problems and the future development of Arctic and Subarctic lands, focusing primarily on Canada.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.360★**

**The Soviet Union and Successor States: A Geographic Survey**

A general review of the physical, social and economic geography of the Soviet Union and successor states, with detailed analyses of selected topics related to social and population conditions, resources development and environmental problems, including comparisons with North America.

Prerequisite: Third-year standing.

Offered in alternate years to Geography 45.361★.

Lectures three hours a week.



**Geography 45.361 ★****Eastern Europe: A Geographic Survey**

A general review of the physical, social and economic geography of Eastern Europe, with detailed analyses of selected topics related to social and population conditions, resources development and environmental problems, including comparisons with North America.

Prerequisite: Third-year standing.

Offered in alternate years to Geography 45.360 ★.

Lectures three hours a week.

**Geography 45.362 ★****Geography of Southern Africa**

Broad geographical coverage of the subcontinent from Zambia southwards with particular reference to the environmental, historical, economic, cultural and political dimensions necessary to understand the contemporary context of and around South Africa. Precludes additional credit for Geography 45.395 ★ (if taken in 1990-1994).

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.370 ★****Population Geography**

The distributional aspects of population attributes; areal patterns of population characteristics and their spatial variations associated with differences in the nature of places; migratory movements within the framework of spatial models of interactions between locations.

Prerequisite: Either Geography 45.220 ★ or 45.230 ★ or permission of the Department.

Lectures three hours a week.

**Geography 45.390 ★****Geographic Thought and Methodology**

Debate about the nature of geography and what geographers do; frameworks for understanding the discipline; debates within physical, environmental, and human geography and the connections among them.

Prerequisite: Third-year Honours Geography standing.

Lectures two hours a week, discussion one hour a week.

**Geography 45.395 ★****Selected World Regional Problems**

Geographical analysis of topical problem areas in the world community. The region of study in 1998-99 will be Europe.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

- **400-level courses are normally restricted to students with Fourth-year Honours standing. However, a student with Third-year standing may take 400-level courses provided the student has the necessary prerequisites, a Geography GPA of 6.5 or better, and permission of the Department.**

**Geography 45.400 ★****Field Studies**

Field observation and methodology in a selected region; individual or group basis.

Prerequisite: Permission of the Department.

Hours to be arranged.

**Geography 45.403 ★****Remote Sensing of the Environment**

Primary optical and radar remote sensing systems; image processing for feature enhancement and thematic mapping using high level image analysis software; applications in forestry, agriculture, geology, urban map updating, and integration of remote sensing with other spatial data.

Prerequisites: Geography 45.302 ★ and Honours standing; or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.404 ★****Environmental Impact Assessment**

Principles, scope and purpose of environmental impact assessment, from conceptual and methodological points of view; range of environmental issues with an emphasis on primarily Canadian case studies.

Prerequisite: Fourth-year Honours standing in Geography or Environmental Studies or Environmental Science, or permission of the Department.

Note: Geography 45.311 ★ or 45.336 ★ is recommended.

Lectures and seminars three hours a week.

**Geography 45.405 ★****Directed Studies in Geography**

Students pursue their interest in a selected theme in geography on a tutorial basis with a member of the Department.

Precludes additional credit for Geography 45.401 ★ and 45.402 ★.

Prerequisites: Fourth-year Honours standing in Geography and permission of the Department.

**Geography 45.406 ★****Analytical and Computer Cartography**

Theoretical and practical approaches to analytical and computer cartography, with an emphasis on digital mapping algorithms using microcomputers.

Precludes additional credit for Geography 45.326 ★.

Prerequisites: Geography 45.307 ★ (or equivalent), and Fourth-year Honours standing; or permission of the Department. Basic mathematical skills (linear algebra, geometry, and trigonometry) and knowledge of data processing are assumed.

Lectures and laboratory three hours a week.

**Geography 45.408 ★****Advanced Topics in Geographic Information Systems**

Advanced methods and techniques in GIS applications including: positional and attribute error analysis, multiple criteria decision making, interpolation, elevation modelling and ortho-imaging, and spatial pattern measurement.

Prerequisites: Geography 45.304 and Honours standing in Geography.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.411 ★****Quaternary Geography**

Changes in the physical environment of the earth during the last two million years; methods of studying recent earth history; the last ice age in Canada. (Also listed as Geology 67.415 ★.)

Prerequisites: Geography 45.315 ★ or permission of the Department.

Note: Geography 45.312 ★ and Geology 67.332 ★ are recommended.

Lectures three hours a week.

**Geography 45.412 ★****Terrain Analysis**

Statistical techniques of morphometric and spatial analysis; applications in geomorphology and geography.

Prerequisites: Geography 45.205 ★ and 45.206 ★, or 45.204 and Honours standing; or permission of the Department.

Lectures three hours a week.

**Geography 45.413 ★****Water Resources Engineering**

A quantitative analysis of natural water systems and the development of these systems, as a resource, by society. Distribution of water resources in Canada, descriptive and quantitative hydrology, groundwater, probability concepts in water resources, optimization of water resource utilization, water distribution and pipe networks. (Also listed as Engineering 81.303 ★.)

Prerequisites: Engineering 86.230 ★ and 82.328 ★, or permission of the Department.

Lectures three hours a week, problem analysis one hour a week.

**Geography 45.414 ★****Microclimatology**

The formation of microclimates near the Earth's surface; energy and water flows; the interaction of atmospheric processes with the physical properties of surfaces.



Prerequisite: Geography 45.315★ or permission of the Department.  
Lectures three hours a week.

**Geography 45.417★**

**Geotechnical Mechanics**

Soil composition and soil classification. Soil properties, compaction, seepage and permeability. Concepts of pore water pressure, capillary pressure and hydraulic head. Principle of effective stress, stress-deformation and strength characteristics of soils, consolidation, stress distribution with soils, and settlement. Laboratory testing. (Also listed as Engineering 82.328★, Geology 67.417★.)

Precludes additional credit for Geography 45.424★.

Prerequisites: Geology 67.244★ or equivalent and Third-year registration, or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks.

**Geography 45.418★**

**Permafrost**

Distribution, development, and degradation of permafrost in Canada; thermal and hydrologic regime of permafrost terrain; development of landforms in permafrost regions; geotechnical consideration in northern construction.

Prerequisite: Geography 45.318★ or permission of the Department.

Lectures three hours a week.

**Geography 45.423★**

**Urban Revitalization**

Recent revitalization of inner cities from an internationally comparative perspective; residential, commercial and institutional dimensions of revitalization, with particular reference to waterfronts and to heritage conservation issues.

Prerequisites: Geography 45.320★ and Fourth-year Honours Geography standing, or permission of the Department.

Seminar three hours a week; optional residential field week.

**Geography 45.425★**

**Space, Place and Well-being**

The spatial variation in life-chances; geographically varying access to goods such as health care, shelter, work, and security in light of diverse ideas of equality.

Prerequisites: Geography 45.303★ and Fourth-year Honours standing or permission of the Department. Geography 45.370★ is also recommended.

Lectures and seminars three hours a week.

**Geography 45.426★**

**Health, Environment and Society**

The social and environmental contexts of human disease through the methods and concepts of spatial epidemiology; the ecology of communicable and degenerative diseases in First- and Third-World situations.

Prerequisites: Geography 45.370★ and Fourth-year Honours standing or permission of the Department.

Lecture three hours a week.

**Geography 45.427★**

**Urban Development and Analysis**

The relationship between changes in urban development and geographic theory, emphasizing contemporary critical perspectives on selected urban issues.

Prerequisite: Fourth-year Honours Geography standing or permission of the Department.

Seminar three hours a week.

**Geography 45.430★**

**Comparative Environmental Movements**

The emergence of contemporary, locally-based, environmental movements in Canada, Africa, Asia, and Latin America. Case studies to analyze local environmental action in relation to the broader political economy and long term sustainability of land use.

Prerequisites: Fourth-year Honours standing and 45.329★ or 45.330★ or permission of the Geography Department.

Seminar three hours a week.

**Geography 45.431★**

**Advanced Cultural Geography**

Cross-cultural thematic examination of territorial organization, territoriality, mental maps, geographies of the mind, and landscape impact of authority and ideology. Regional emphasis on Canada.

Prerequisite: Geography 45.230★ or permission of the Department. Geography 45.231★ recommended.

Seminar three hours a week.

**Geography 45.433★**

**Urban Planning**

A systematic approach to urban planning; urban sprawl; data collection; forecasting; standards; space requirements; land use; zoning; transportation; land development; site selection; land capability; layout; evaluation; housing; urban renewal and new towns. (Also listed as Engineering 82.433★.)

Prerequisite: Third-year registration, or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Geography 45.434★**

**Transportation Engineering and Planning**

Transportation and the socio-economic environment; modal and intermodal systems and components; vehicle motion; human factors, system and facility design; traffic flow; capacity analysis; planning methodology; environmental impacts; evaluation methods. (Also listed as Engineering 82.334★.)

Prerequisite: Third-year registration, or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Geography 45.435★**

**Historical Geography**

The relation of geography and history, the use of field techniques, primary documents, model building and statistical methods in historical geography. Emphasis on local studies.

Also offered at the graduate level, with additional or different requirements, as Geography 45.545★, for which additional credit is precluded.

Prerequisite: Geography 45.335 or permission of the Department.

Seminar three hours a week.

**Geography 45.440★**

**Advanced Political Geography**

Contemporary political geography theories and concepts applied to issues of recent and contemporary regional conflicts and territorial disputes; case studies of changing political arrangements including Western European integration and post-Cold War political reorganization in Eastern Europe; environmental conflict and international security.

Prerequisite: Geography 45.337★ and Fourth-year Honours standing, or permission of the Department.

Seminar three hours a week.

**Geography 45.442★**

**Transportation Geography**

Geographical appraisal of transportation systems in relation to their physical, social, and economic milieu. The role of transport in industrial location, regional development and trade patterns; problems of urban transport and Canadian transportation policy issues.

Precludes additional credit for Engineering 82.435★.

Prerequisite: Geography 45.220★ and Fourth-year Honours standing or permission of the Department.

Lectures three hours a week.

**Geography 45.443★**

**Issues in Applied Economic Geography**

Selected topics drawn from a variety of areas of concern, such as agriculture, resource development, manufacturing and trade.

Prerequisite: Geography 45.344★ or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.445 ★****Rural Land Use Analysis**

Rural land use issues from physical and socio-economic perspectives, contemporary methods for rural land use evaluation; rural land use policies.

Prerequisite: Geography 45.336 ★ and Fourth-year Honours standing, or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.446 ★****Practicum in Geography I**

Experience in an employment environment through field placement. Observation and involvement in issues and research methods used by professional geographers.

May be taken for credit in addition to Geography 45.448 ★.

Prerequisites: Fourth-year Honours standing in Geography and permission of the Department.

Field placement one day a week.

**Geography 45.447 ★****Canadian Agriculture**

Trends in farm organization and production; issues arising from farmings relationships to the physical resource base, land market pressures, government policies and regulations, and agribusiness and marketing organizations.

Precludes additional credit for Geography 45.443 ★ (if taken in 1994-95).

Prerequisites: Geography 45.255 ★ or 45.336 ★ and Fourth-year Honours standing, or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.448 ★****Practicum in Geography II**

Experience in an employment environment through field placement. Observation and involvement in issues and research methods used by professional geographers.

May be taken for credit in addition to Geography 45.446 ★.

Prerequisites: Fourth-year Honours standing in Geography and permission of the Department.

Field placement of one day a week.

**Geography 45.460 ★****The Changing Geography of Post-Communist Societies**

Geographical dimensions of political and economic transition in the post-communist societies of Eastern Europe and the former U.S.S.R. Topics may include environmental degradation, resource management, population, quality of life, industrial restructuring and regional development, urban and rural changes, energy, transportation, and foreign trade.

Prerequisites: Fourth-year Honours standing, Geography 45.360 ★ or 45.361 ★ or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.496****Honours Research Project**

Candidates for B.Sc. with Honours in Geography undertake a research project based on a laboratory or field problem. The project is supervised by a member of the department and a written report must be submitted. The candidate may be examined orally on the report.

Prerequisite: Fourth-year Honours standing in Geography.

Hours to be arranged.

**Geography 45.498****Honours Research Workshop**

Advanced training in research design, data collection and analysis, report writing and oral presentations; undertaking of an individual research project and preparation of a major report on a selected topic on the National Capital Region.

Precludes additional credit for Geography 45.491 ★ and 45.492 ★, or 45.499.

Prerequisite: Fourth-year Honours standing in Geography.

Workshop/seminar three hours per week.

**Geography 45.499****Honours Research Essay**

A student in the Fourth year of B.A. (Honours) or Combined B.A. (Honours) in Geography may write an Honours essay or equivalent. The essay counts as the equivalent of 1.0 credit. Students work under an individual faculty adviser. The subject for research is decided upon in consultation with the supervisor.

Prerequisites: Fourth-year Honours standing in Geography, a Geography GPA of 8.0 or better, an approved research topic, and permission of the Honours supervisor.

Hours to be arranged with faculty adviser.



# School of Languages, Literatures and Comparative Literary Studies

## German

### (Arts and Social Sciences)

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1416 Dunton Tower  
Telephone: 520-5644

#### General Information

Students currently enrolled in programs offered by the Discipline of German are governed by the requirements contained in the 1997-98 *Undergraduate Calendar*.

#### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

German 22.115

##### **Introductory German**

A beginners' course designed to give a sound grasp of the fundamentals of present-day German. The facilities of the Language Learning Resource Centre and computer-assisted language instruction are available for both on-campus and off-campus use. Lectures two hours a week and workshops two hours a week.

German 22.118

##### **Reading German**

A course for beginners interested in the rapid acquisition of a reading knowledge of German. Grammar; use of dictionaries; basic vocabulary. Taught in English. Seminar four hours a week.

German 22.120 (2.0 credits)

##### **Intensive Introductory German**

An intensive course designed to enable students with little or no previous knowledge of German to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.205. Enrolment is not restricted to those intending to obtain an B.A. (Honours) or B.A. degree in the German Program. Prerequisite: Permission of the School. Lectures four hours a week and four hours seminar a week.

German 22.205

##### **Intermediate German A**

The course takes students from successful completion of the elementary course to a stage where they can use German in a variety of situations. Emphasis on reading and writing but including oral work. Prerequisite: German 22.115 or 22.118; or equivalent. Seminar four hours a week.

German 22.206

##### **Intermediate German B**

Designed for students with a higher-than-average standing on the elementary level, or with several years of high school or equivalent background, this course takes students to a stage where they can use German in a variety of situations. Prerequisite: Standing of B+ or better in German 22.115 or equivalent. Seminar four hours a week.

German 22.209★

##### **Spoken German**

A course to develop increased proficiency in spoken German. Oral comprehension and systematic enlargement of vocabulary. Practice in the effective presentation of arguments and reports. Prerequisite: German 22.120 or 22.205 or 22.206; or permission of the School. (This course is not open to native speakers of German.) Seminar three hours a week and one hour language laboratory a week.

German 22.211★

##### **Descriptive Analysis of Contemporary German Vocabulary**

Patterns of German word formation and their interaction with syntactic structures. Analysis of text samples from various written sources; some practice in writing short essays in German. Prerequisite: German 22.120 or 22.205 or 22.206, or permission of the School. Lectures three hours a week.

German 22.213

##### **Written German: Analysis and Practice**

A course parallel to German 22.209★ and emphasizing effective communication in written German. Explication of grammatical patterns and sentence structure in the light of current linguistic theory. Text analyses and practice in structured writing. Precludes additional credit for German 22.210★ and 22.212★. Prerequisite: German 22.120 or 22.205 or 22.206, or permission of the School. Seminar three hours a week.

German 22.240

##### **An Introduction to Literary Reading**

An introduction both to representative works of German literature (to be read in German), and to the informed discussion of literary texts, including narrative fiction, poetry and drama. Prerequisite: German 22.118 or 22.120 or 22.205 or 22.206 or 22.213; or permission of the School. Seminar three hours a week.

German 22.301★

##### **Advanced Spoken German**

Practice of oral comprehension and spoken German in discussions, short presentations and casual talks; based on material (films and texts) illustrating concerns of contemporary Germany. Prerequisite: German 22.209★ or 22.210★, 22.213; or permission of the School. Seminar three hours a week.

German 22.302★

##### **Advanced Written German**

The development of arguments and their effective presentation in texts expository and analytical, descriptive and narrative. Prerequisite: German 22.210★, or 22.211★ or 22.212★, 22.213; or permission of the School. Seminar three hours a week.

## German 22.303★

**Contrastive Semantics**

Systematic analysis of German-English contrastive semantics: collocations (e.g. verb-noun, adjective-noun, adverb-adjective), emphatic particles, cognates and false cognates, word-field domains, cultural-specific metaphorizing and cognition, phraseology (idioms and similes), register.

Prerequisite: German 22.211★ or 22.213; or permission of the School.

Seminar three hours a week.

## German 22.311★

**Linguistic Text Analysis**

Theory (structure, function and examples of written and spoken texts) and praxis of text analysis (representing fiction and non-fiction in modern German), production of written and spoken texts of various nonfictional types (*Gebrauchstexte*).

Prerequisite: German 22.211★ or 22.212★, or 22.213; or permission of the School.

Seminar three hours a week.

## German 22.312

**Twentieth-Century German as a Literary Language**

Narrative style from the viewpoint of discourse analysis with particular emphasis on gender aesthetics. Texts by authors such as Thomas Mann, Franz Kafka, Günter Grass, Ilse Aichinger, Christa Reinig, Christa Wolf.

Prerequisite: German 22.210★ or 22.211★ or 22.212★, 22.213; or permission of the School.

Seminar three hours a week.

## German 22.348★

**Special Topic in a Genre in German Literature**

This course discusses in different years the development of one of the literary genres (poetry, drama, prose) within a specific time-frame.

Prerequisite: German 22.240 or permission of the School.

Seminar three hours a week.

## German 22.350

**German Literature of the Eighteenth Century**

The literature of the Enlightenment, Storm and Stress, and Early Classicism, with special emphasis on the works of Lessing, Goethe and Schiller.

Prerequisite: German 22.240 or permission of the School.

Seminar three hours a week.

## German 22.352★

**Special Topic in Nineteenth-Century German Literature**

This course discusses, for example, an author, a genre, a theme.

Prerequisite: German 22.240 or permission of the School.

Seminar three hours a week.

## German 22.380

**German Literature in the Twentieth Century**

Representative texts from drama, poetry, and prose fiction in the period from Hauptmann to Grass.

Prerequisite: German 22.240 or permission of the School.

Seminar three hours a week.

## German 22.402★

**Translation**

Practical exercises in translation and consideration of some theoretical approaches.

Prerequisite: German 22.302★ or 22.311★; or permission of the School.

Seminar three hours a week.

## German 22.403★

**German Syntax**

A systematic investigation of the principles of syntax in modern written German. Also offered at the graduate level, with additional or different requirements, as German 22.584, for which additional credit is precluded.

Prerequisite: German 22.302★ or 22.311★ or 22.402★; or permission of the School.

Lectures two hours a week and seminar one hour a week.

## German 22.405

**Formal German Speech (*Die deutsche Rede*)**

A study of rhetoric as the art of persuasion and as instrument of power in political propaganda and mass communication in Germany from the Pre-World War I period, in the Third Reich, during the Cold War and after the *Wende* ("reunification"). Practice of forensic skills.

Precludes additional credit for German 22.401★.

Prerequisite: German 22.301★ or 22.302★, or 22.312; or permission of the School.

Lecture one hour and seminar two hours a week.

## German 22.412

**History of the German Language**

Significant stages in the development of German: the evolution of its phonetic and grammatical structure, its vocabulary and stylistic norms. The social role of language of the twentieth century: language as a means of manipulation, divided German; sociolinguistic facets of contemporary literary language. Also offered at the graduate level, with additional or different requirements, as German 22.581, for which additional credit is precluded.

Prerequisite: One of German 22.211★ or 22.312 or 22.430; or permission of the School.

Lectures two hours a week and seminar one hour a week.

## German 22.430

**Medieval Language and Literature**

Introduction to Medieval German; Medieval narrative style in heroic epic poetry (*Nibelungenlied*) and early vernacular love poetry (*Minnesang*). Also offered at the graduate level, with additional or different requirements, as German 22.563, for which additional credit is precluded.

Prerequisite: German 22.240 or permission of the School.

Seminar three hours a week.

## German 22.440★

**Early Modern German Literature**

Selected readings from the Reformation and the Baroque.

Precludes additional credit for German 22.441★ and 22.442★.

Prerequisites: German 22.240 and 1.0 credit (or equivalent) in German at the 300-level; or permission of the School.

Seminar three hours a week.

## German 22.454★

**Seminar on a Topic from the Eighteenth Century**

A detailed study of a movement, an author, a genre, etc.

Prerequisite: German 22.350 or permission of the School.

Seminar three hours a week.

## German 22.469★

**Selected Authors of the Nineteenth Century**

A detailed study of works by specific authors such as Fontane or Keller or Kleist.

Prerequisite: German 22.240 or permission of the School.

Three hours a week.

## German 22.470

**Seminar on a Literary or Linguistic Topic**

Topic for 1998-99: The development of the discourse on Nationalism in nineteenth and twentieth century Germany. Also offered at the graduate level with additional or different requirements, as German 22.586 for which additional credit is precluded.

Prerequisite: German 22.350 or 22.380; or permission of the School.

Seminar three hours a week.

## German 22.471★

**Seminar on a Selected Topic**

Prerequisite: German 22.240 or permission of the School.

Seminar three hours a week.

## German 22.472★

**Literary Semiotics**

Analysis of literary texts to discover the sign-systems through which literature communicates meaning. In different years the principal object of study will be the semiotics of either poetry or narrative prose or drama.



Prerequisite: German 22.240 or permission of the School.  
Seminar three hours a week.

**German 22.483 ★**

**Language and Society in Twentieth-Century Germany**

The course concentrates on one of the following: language as a means of manipulation; divided German; socio-linguistic aspects of contemporary literary language.

Prerequisite: German 22.301 ★ or 22.302 ★, or 22.312; or permission of the School.

Seminar three hours a week.

**German 22.490 ★**

**Tutorial on a Selected Topic**

A topic in German literature (an author or group of authors, a genre, a theme or period) or in the linguistics of German.

Prerequisite: Permission of the School.

Seminar three hours a week.

**German 22.491**

**Tutorial**

A topic in German literature (an author or group of authors, a genre, a theme or period) or in the linguistics of German.

Prerequisite: Permission of the School.

Seminar three hours a week.

**German 22.492 ★**

**Tutorial in Advanced Translation**

Primarily for Honours students in their final year. Students complete a substantial translation project. Theoretical and institutional problems of translation are considered.

Prerequisites: German 22.311 ★ and 22.402 ★ or permission of the School.

Seminar three hours a week.

**German 22.498**

**Honours Essay (2.0 credits)**

Open to candidates for Honours German and Honours German Studies in their Fourth year. Minimum requirement for admission to the course: an average of A- in Third year in the two core disciplines for students in German Studies, or, for students in German, A- in German courses in Third year. Candidates for Honours German Studies are required to write an essay with an interdisciplinary topic. For all students the essay will be approximately 16,000 words.

Prerequisites: Permission of the School.

# History

## (Arts and Social Sciences)

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400 Paterson Hall  
Telephone: 520-2828

### Academic Administration

**Chair**, E.P. Fitzgerald

**Supervisor of Graduate Studies**, Duncan McDowall

**Supervisor of Honours Studies**, Sonya Lipsett-Rivera

**Supervisor of B.A. Studies**, Dominique Marshall

**Adviser for "Mention français"**, E.P. Fitzgerald

### Teaching Staff

#### Professors Emeriti

**David M.L. Farr**, B.A. (British Columbia), M.A. (Toronto), D.Phil. (Oxford) • **S.R. Mealing**, B.A. (Alberta), B.Litt., M.A. (Oxford) • **H. Blair Neatby**, B.A. (Saskatchewan), M.A. (Oxford), Ph.D. (Toronto), F.R.S.C. • **Michael J. Sydenham**, B.A., Ph.D. (London), F.R.Hist.S

#### Professors

**J. Laurence Black**, B.A. (Mount Allison), M.A. (Boston), Ph.D. (McGill) • **R. Carter Elwood**, B.A. (Dartmouth), M.A., Ph.D. (Columbia) • **Deborah S. Gorham**, B.A. (McGill), M.A. (Wisconsin), Ph.D. (Ottawa) • **G. Norman Hillmer**, B.A., M.A. (Toronto), Ph.D. (Cambridge) • **Peter John King**, B.A., M.A. (Cambridge), A.M., Ph.D. (Illinois) • **Duncan L. McDowall**, B.A., M.A. (Queen's), Ph.D. (Carleton) • **A.B. McKillop**, B.A., M.A. (Manitoba), Ph.D. (Queen's) • **Paul C. Merkley**, B.A., M.A., Ph.D. (Toronto) • **D.A. Muise**, B.A. (St. Francis Xavier), M.A. (Carleton), Ph.D. (Western Ontario) • **Roderick Phillips**, B.A. (Trent), M.A. (Otago), D.Phil. (Oxford) • **Franz A.J. Szabo**, B.A. (Montréal), M.A., Ph.D. (Alberta)

#### Associate Professors

**Kerry Abel**, B.A. (Queen's), M.A. (Manitoba), Ph.D. (Queen's) • **Marilyn J. Barber**, B.A., M.A. (Queen's), Ph.D. (London) • **Y. Aleksandra Bennett**, B.A., M.A. (Windsor), Ph.D. (McMaster) • **B.S. Elliott**, B.A. (Carleton), M.A. (Leicester), Ph.D. (Carleton) • **E.P. Fitzgerald**, B.A. (Seton Hall), M.A., Ph.D. (Yale) • **R.B. Goheen**, B.A. (Toronto), M.A., Ph.D. (Yale) • **Grover F. Goodwin**, B.A. (Virginia), Ph.D. (Princeton) • **Jacob Kovallo**, B.A. (Tel-Aviv), M.A., Ph.D. (Pittsburgh) • **Walter Roy Laird**, B.A. (Concordia), M.A., Ph.D. (Toronto) • **Sonya Lipsett-Rivera**, B.A. (Ottawa), M.A., Ph.D. (Tulane) • **Dominique Marshall**, B.A., M.A., Ph.D. (Montréal) • **J.H. Taylor**, B.Sc. (Alberta), M.A. (British Columbia)

#### Assistant Professors

**Pamela J. Walker**, B.A. (Concordia), M.A. (York), Ph.D. (Rutgers) • **Susan Whitney**, B.A. (Princeton), M.A. (Brown), Ph.D. (Rutgers)

#### Adjunct Research Professors

**N. Adamson** • **J.G. Bellamy** • **B. Carman Bickerton** • **R.T. Clippindale** • **D. Dean** • **V. Dickenson**, McCord Museum, Montreal • **W.A.B. Douglas** • **Toby Gelfand**, University of Ottawa • **Naomi E.S. Griffiths** • **S.J. Harris**, National Defence Headquarters • **J.K. Johnson** • **M.W. Labarge** • **R.F. Sarty**, National Defence Headquarters • **S.F. Wise**

#### Adjunct Professors

**F.J.K. Griezic** • **H.A. MacDougall**

#### Visiting Associate Professor

**David M. Dean**, B.A., M.A. (Auckland), Ph.D. (Cambridge), F.R.Hist.S

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### Programs of Study

Students intending to major in History, whether in the B.A. (Honours), B.A., or Graduate program, should first consult with the appropriate adviser. Students considering an Honours program should note particularly the compulsory requirements not included in the B.A. program. All majors in History should review their course of study annually with the appropriate adviser.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), all Major regulations and requirements as set out below.



## Honours Program in History

Students in the B.A. (Honours) program are required to complete a minimum of 10.0 credits in History. They may satisfy the requirements in two different ways:

1. (a) 1.0 credit at the 100-level, to be taken in the First year (in exceptional circumstances a 200-level course may be taken in its place.)
- (b) 3.0 credits at the 200-level, to be taken in the Second year; History 24.288 is highly recommended for Honours students.
- (c) 3.0 credits at the 300-level, to include 24.388, to be taken in the Third year.
- (d) 3.0 credits at the 400-level, to be taken in the Fourth year. Students should endeavour to have at least one course at the 200- or 300-level in the area of each Fourth-year seminar. Not more than two seminars may be taken in any one of the following fields:
  - (i) ancient, medieval and early modern Europe;
  - (ii) modern Western Europe;
  - (iii) Russia and Eastern Europe;
  - (iv) Great Britain and the Commonwealth;
  - (v) Canada;
  - (vi) United States;
  - (vii) European expansion and the non-Western world.

One of these seminar credits may, with departmental approval, be taken in a discipline other than History. Students choosing this option will be required to present only 9.0 History credits.

2. Students may elect to present a research essay (History 24.499) worth 2.0 credits as part of their Honours program. The program for these students is:

- (a) 1.0 credit at the 100-level, to be taken as part of the First year (in exceptional circumstances a 200-level course may be taken in its place).
- (b) 2.0 or 3.0 credits at the 200-level, to be taken in the Second year; History 24.288 is highly recommended for Honours students.
- (c) 2.0 or 3.0 credits at the 300-level, to include 24.388, depending on the number of 200-level credits taken. The decision to commit to a research essay should be made at the beginning of Third year.
- (d) History 24.499 (2.0 credits) and 2.0 400-level credits, to be taken in the Fourth year. Students should endeavour to have one course at the 200- or 300-level in the area of each fourth-year seminar. Not more than two seminars may be taken in any one of the following fields:
  - (i) ancient, medieval and early modern Europe;
  - (ii) modern Western Europe;
  - (iii) Russian and Eastern Europe;
  - (iv) Great Britain and the Commonwealth;
  - (v) Canada;
  - (vi) United States;
  - (vii) European expansion and the non-Western world.

3. Courses offered at the 100-, 200-, and 300-levels generally fall into the following four fields:

- (a) ancient, medieval and early modern Europe;
- (b) modern Europe;
- (c) North America;
- (d) European expansion and the non-Western world.

Before beginning the Fourth year, all Honours students are required to take at least 1.0 credit at the 100-, 200-, or 300-level in three of the four fields. History 24.388 may not be used to satisfy this field requirement.

## Combined Honours Programs

Students combining History with another subject are required to complete 6.0 credits in History.

- (a) 1.0 credit at the 100-level, to be taken in the First year (in exceptional circumstances a 200-level credit may be taken in its place).
- (b) 2.0 credits at the 200-level, to be taken in the Second year.
- (c) 2.0 credits at the 300-level, to include 24.388, to be taken in the Third year.
- (d) 1.0 credit at the 400-level to be taken in the Fourth year.

Before beginning the Fourth year, Combined Honours students are required to take at least 1.0 credit at the 100-, 200-, or 300-level in three of the four fields listed under item 3 of the Honours Program in History.

## B.A. Programs

### Entrance and Continuation

Entry into History B.A. programs requires enrolment in a 100-level History course, or an equivalent approved by the Department. Continuation requires completion of such a course with a C- or better average, and maintenance of a C- or better average over all other History courses successfully completed. History graduation averages will be calculated on the 6.0 best History credits for B.A. and the 5.0 best for Combined B.A.

### B.A. Program in History

1. Students in the B.A. program in history are required to complete 7.0 credits in history.

- (a) 1.0 credit at the 100-level, to be taken in the First year (in exceptional circumstances a 200-level credit may be taken in its place).
- (b) 3.0 credits at the 200-level, to be taken in the Second year.
- (c) 3.0 credits at the 300-level, to be taken in the Third year.

Credits at the 400-level may be presented for graduation in a major program only with permission of the department.

2. Courses offered at the 100-, 200-, and 300-levels generally fall into the following four fields:

- (a) ancient, medieval, and early modern Europe;
- (b) modern Europe;
- (c) North America;
- (d) European expansion and the non-Western world.

B.A. students are required to take at least 1.0 credit at the 100-, 200-, or 300-level in three of the four fields. History 24.388 may not be used to satisfy this field requirement.

### Combined B.A. Program in History

1. Students in the combined B.A. program in history are required to complete 5.0 credits in history.

- (a) 1.0 credit at the 100-level, to be taken in the First year (in exceptional circumstances a 200-level credit may be taken in its place).
- (b) 2.0 credits at the 200-level, to be taken in the Second year.
- (c) 2.0 credits at the 300-level, to be taken in the Third year.

Credits at the 400-level may be presented for graduation in a combined major program only with permission of the Department.

2. The courses offered at the 100-, 200-, and 300-levels generally fall into the following four fields:

- (a) ancient, medieval, and early modern Europe;
- (b) modern Europe;
- (c) North America;
- (d) European expansion and the non-Western world.

Combined B.A. students are required to take at least 1.0 credit at the 100-, 200-, or 300-level in at least two of the four fields.

## Minor in History

Students desiring a minor in history are required to complete 4.0 credits in history.

- (a) 1.0 credit at the 100-level;
- (b) 1.0 credit at the 200-level;
- (c) 1.0 credit at the 300-level;
- (d) 1.0 credit at either the 200- or 300-level.



## "Mention: français"

Students in the B.A. (Honours) or B.A. program in History may qualify for the notation "Mention: français" by fulfilling the requirements outlined below. (See p. 83.) Those wishing to pursue this path should consult with the Department's "Mention: français" adviser. Approval of this adviser is required for all courses under the "Mention: français".

History courses presented in fulfilment of the "Mention: français" requirement can double as courses to satisfy History B.A. (Honours) or B.A. requirements.

Students enrolling in courses at the University of Ottawa will do so through the University of Ottawa Exchange Program. To enrol in courses in French at another university, students must obtain a Letter of Permission. (See articles 3.12 and 3.13, p. 75.)

### B.A. (Honours) and Combined B.A. (Honours)

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French for the purpose of perfecting the student's French language skills.
2. 1.0 credit from the following list of courses taught in French at Carleton or the University of Ottawa and relating to the French experience in Canada: (Carleton) French 20.372★ and 20.373★; (University of Ottawa) Histoire HIS 2601, HIS 2701; Français FRA 2525, FRA 2526, FRA 2711, FRA 2714, FRA 2722, FRA 2727; Linguistique LIN 2502; Études Religieuses SRS 2530.
3. 1.0 credit in History at the 200- or 300-level taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, History 24.390 and 24.391★ are available in French to meet this requirement.
4. Either History 24.498, or a 1.0 credit History seminar at the 400-level taught in French at the University of Ottawa. All written work must be submitted in French.
5. Combined Honours students must meet the "Mention: français" requirements of both Honours disciplines.

### B.A. or Combined B.A.

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French for the purpose of perfecting the student's French language skills.
2. 1.0 credit from the following list of courses taught in French at Carleton or the University of Ottawa and concerned with the study of the heritage and culture of French Canada: (Carleton) French 20.372★ and 20.373★; (University of Ottawa) Histoire HIS 2601, HIS 2701; Français FRA 2525, FRA 2526, FRA 2711, FRA 2714, FRA 2722, FRA 2727; Linguistique LIN 2502; Études Religieuses SRS 2530.
3. 1.0 credit in History at the 200- or 300-level taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, History 24.390 and 24.391★ are available in French to meet this requirement.
4. Combined B.A. students must meet the "Mention: français" requirements of both disciplines.

## Cross-Listed Courses

The Department of History cross-lists several courses offered by other departments (e.g., several Classical Civilization courses in the Discipline of Classics). No more than 2.0 credits in cross-listed courses may be included in the 7.0 credits required for the B.A. program or the 5.0 credits required in Combined B.A. programs. No more than 3.0 credits in cross-listed courses may be included in a B.A. (Honours) or Combined B.A. (Honours) program.

## Prerequisites

Unless otherwise stated, the prerequisite for any 300-level course is:

1. A 200-level course, preferably in an appropriate field (for fields, see *B.A. Program in History*, paragraph 2); or
2. Permission of the Department.

The prerequisite for any 400-level course is permission of the Department. Permission will normally be granted to students who have taken two 300-level History courses, with one course at either the 200- or 300-level in an appropriate field. Special students will be admitted to 400-level courses only under exceptional circumstances.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in History 01.112  
**History of Western Civilization**  
 See course description on p. 85.

First-Year Seminar in History 01.113  
**Introduction to Canadian History**  
 See course description on p. 85.

First-Year Seminar in History 01.145  
**Turning Points in Modern History**  
 See course description on p. 85.

History 24.101  
**History of Western Civilization**  
 A survey of the major events, ideas and movements that have shaped western civilization from the fall of Rome to the twentieth century. (Field a or b)  
 Precludes additional credit for First-Year Seminar 01.112.  
 Prerequisite: Registration is restricted to First-year students.  
 Lectures two hours a week, discussion groups one hour a week.

History 24.102  
**Europe in the Twentieth Century**  
 An introduction to some of the major ideological, political, diplomatic, military, social, cultural and economic developments that have shaped contemporary Europe. This course is designed primarily for students who do not plan to major in history. Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school. (Field b)  
 Lectures three hours a week.

History 24.109  
**Turning Points in Modern History**  
 Introductory seminars emphasizing the development of writing, research and analytical skills through the intensive examination of selected topics in modern history (e.g., the Italian Renaissance, the French Revolution, the impact of science, industrialization, the origins of the world wars). The numbers in each seminar will be kept small in order to provide an opportunity to work closely with individual faculty members.  
 Precludes additional credit for History 24.100.  
 Registration is restricted to First-year students.  
 Seminar three hours a week.

History 24.130  
**Introduction to Canadian History**  
 A historical study of the political, economic and social development of Canada with emphasis on the twentieth century. (Field c)  
 Precludes additional credit for First-Year Seminar 01.113.  
 Prerequisite: Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school.  
 Lectures two hours a week, discussion groups one hour a week.



History 24.170

**Europe and the Non-Western World**

A study of European expansion overseas and of the range of local responses to Western pressures, with a view to explaining how this two-fold process shaped the historical development of Asia, Africa and Latin America. (Field d)

Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school.

Lectures three hours a week.

History 24.205

**England During the Middle Ages**

A study concentrating on the political development of medieval England, A.D. 410-1485. (Field a)

Lectures three hours a week.

History 24.210

**Introduction to the History of Ideas**

A study of Western intellectual development which considers such movements as humanism, the Enlightenment, romanticism, Darwinism and contemporary ideologies. (Field a or b)

Lectures three hours a week.

History 24.221

**History of Science**

An introduction to the history of science from antiquity to the twentieth century. Readings include works by Plato, Aristotle, Grosseteste, Galileo, Newton, Darwin and Einstein. No special knowledge of modern science is assumed. (Field a or b)

Lectures three hours a week.

History 24.222

**The Industrial Revolution**

A study of the economic and technological changes that transformed Western society during the nineteenth century. (Field b)

Lectures three hours a week.

History 24.223

**A History of Early Modern Europe, 1500-1789**

The social, economic, cultural and political development of Europe (including Scandinavian, Eastern and Mediterranean as well as Western and Central Europe) from the era of the Reformation to the outbreak of the French Revolution. Special attention is paid to social themes. (Field a)

Lectures three hours a week.

History 24.224

**The Revolutionary Tradition in Europe, 1789-1900**

Beginning with the French Revolution of 1789, the course includes such significant movements as romanticism, nationalism, the rise and implications of industrialism, and the development of socialist theory culminating in Marxism. (Field b)

Lectures three hours a week.

History 24.233

**Canadian Political History**

A historical survey of the Canadian political tradition from the late eighteenth century to the present. Politicians, parties, ideas, social context and dissent are examined. Second-year standing recommended. (Field c)

Lectures three hours a week.

History 24.234

**Canadian Social History**

A historical survey of the structure and values of Canadian societies from the eighteenth to the twentieth centuries. Second-year standing recommended. (Field c)

Lectures three hours a week.

History 24.235

**Canadian Economic History**

A historical survey of persistence and change in the Canadian economy from the eighteenth to the twentieth centuries. (Field c) (Also listed as Economics 43.235.)

Prerequisite: Economics 43.100 or permission of the Department of History.

Lectures three hours a week.

History 24.236

**The Spanish and English Colonies in North America**

A comparative study of the development of the English North American colonies and New Spain (Mexico), with emphasis on settlement, social patterns and institutions, the frontier, native peoples and the emergence of a colonial sense of identity. (Field d)

Lectures three hours a week.

History 24.237

**The History of Latin America**

A survey of the political, economic, and social development of Latin America from the colonial era to the twentieth century. (Field d)

Lectures three hours a week.

History 24.240

**History of the United States of America**

A survey of United States politics and society since the American Revolution. (Field c)

Lectures three hours a week.

History 24.250

**Modern England, 1460-1918**

A survey of significant political and social developments in England from the mid-fifteenth to the early twentieth century. (Field a or b)

Lectures three hours a week.

History 24.254

**Introduction to the History of Women**

A survey of themes in the history of women with emphasis on their European experience, from the early modern period to the present. (Field a or b)

Lectures three hours a week.

History 24.256

**Comparative History of England and France**

A comparison of political and social developments in two major Western European countries, from the seventeenth to the nineteenth century. (Field a or b)

Lectures three hours a week.

History 24.259

**A History of Germany**

A history of the German-speaking peoples from the rise of the Holy Roman Empire to the present. (Field a or b)

Lectures three hours a week.

History 24.260

**History of Russia and the U.S.S.R.**

A survey of Russian history from rise of Kievan Rus to the collapse of the Soviet Union in 1991, with emphasis on the period from the reign of Peter the Great to the revolutions of 1917. (Field a or b)

Lectures three hours a week.

History 24.273

**International Economic History, 1815-1940**

A study of international economic relations from the Industrial Revolution to the Great Depression, with emphasis on two central themes: the role of foreign trade, finance and investment in shaping patterns of national development; the interplay of international economic relations and international politics. (Field b or d)

Precludes additional credit for History 24.272.

Lectures three hours a week.

History 24.275

**History of Africa**

An introduction to the history of Africa. The first half is devoted to the period prior to European colonization with emphasis on West African states and empires; the second half deals with resistance to colonization, European colonial rule, independence and liberation movements. (Field d)

Lectures three hours a week.

History 24.278

**The Middle East: 1798 to the Present**

The history of the development of the civilization and culture of the Middle East from 1798 to the present with special emphasis on

the mutual discovery of East and West, the search for identity, the impact of colonialism and international rivalry, and social, religious and cultural change within a continuing tradition.

(Field d) (Also listed as Religion 34.278.)

Lectures three hours a week.

History 24.280

### **The Diplomatic History of Europe, 1815-1914**

A survey of diplomatic history from the Congress of Vienna to the outbreak of the First World War. (Field b)

Lectures three hours a week.

History 24.281

### **War and Peace in the Modern World**

A comparative survey of the social consequences of war for the major Western European states and Russia from Napoleon to Hitler, and the efforts of international organizations and governments to seek alternative ways to resolve international conflict. (Field b)

Lectures three hours a week.

History 24.285

### **History of China**

A survey of Chinese political and intellectual history from the Xia Dynasty to the 1911 Revolution. Emphasis is placed on the impact of the West on China from the sixteenth to the twentieth century. (Field d)

Lectures three hours a week.

History 24.286

### **History of Japan**

A survey of Japanese history from the legendary beginning of the country in 600 B.C. to the end of World War Two. (Field d)

Lectures three hours a week.

History 24.288

### **The Historian's Craft**

Lectures and workshops on historical methods and materials. Topics will include the discovery, evaluation, use and analysis of documents in historical context, non-documentary evidence, statistics, and bibliographical tools. Highly recommended for Honours students. Not open to First-year students.

Lectures and workshops three hours a week.

History 24.290

### **History of Ancient Greece**

The history of classical Greece to the conquest of Asia by Alexander with special attention to the development of her characteristic institutions. (Field a) (Also listed as Classical Civilization 13.290.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

History 24.291

### **History of Ancient Rome**

The history of ancient Rome, her organization and expansion especially during the late Republic and early Empire. (Field a) (Also listed as Classical Civilization 13.291.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

History 24.302

### **The Later Roman Empire**

A study of major developments-administrative, ecclesiastical, cultural and societal-of the later Roman Empire. (Field a) (Also listed as Classical Civilization 13.302.)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.303

### **History of the Byzantine Empire, 527-1453 A.D.**

The history of the Byzantine empire from Justinian the Great in the sixth century A.D. to the fall of Constantinople in 1453 A.D. Special attention is given to the cultural, religious and institutional development of Byzantium and their impact on the Slavic, Western European and Islamic countries. (Field a) (Also listed as Classical

Civilization 13.303.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

History 24.306★

### **Early Medieval Thought**

A general examination of medieval European intellectual life from the fifth to the twelfth century, with special reference to its setting in the monastery and the cathedral school. (Field a)

Precludes additional credit for History 24.305.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.307★

### **Later Medieval Thought**

A general examination of medieval European intellectual life in the thirteenth and fourteenth centuries, with special reference to its setting in the university. (Field a)

Precludes additional credit for History 24.305.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.309★

### **Studies in Greek History and Institutions**

A study of one of the major periods of ancient Greek history.

(Field a) (Also listed as Classical Civilization 13.321★.)

Prerequisite: Classical Civilization 13.290 (24.290) or permission of the Department.

Lectures two hours a week.

History 24.310

### **Modern Intellectual History**

An intensive study of selected aspects of American, Canadian and European intellectual history in the nineteenth and twentieth centuries, with emphasis on twentieth-century social thought. (Field b or c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.311★

### **Studies in Roman History and Institutions**

A study of one of the major periods or themes of the history of ancient Rome. (Field a) (Also listed as Classical Civilization 13.322★.)

Prerequisite: Classical Civilization 13.291 (24.291) or permission of the Department.

Lectures two hours a week.

History 24.314★

### **Studies in Ancient History and Institutions**

A study of a selected topic in the history of ancient Greece and Rome. (Field a) (Also listed as Classical Civilization 13.323★.)

Prerequisite: Permission of the Department.

Lectures two hours a week.

History 24.315★

### **Renaissance Europe**

The political and cultural history of Europe in the fourteenth, fifteenth and sixteenth centuries, with emphasis on the Italian Renaissance and its diffusion into England and France. (Field a)

Precludes additional credit for History 24.215.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.317

### **The European Family**

Comparative study of the family in early modern and modern Europe. Themes include family and household forms; family economy and government; demography; law; marriage formation, stability and breakdown; gender and family relationships; sexuality. (Field a or b)



Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.318

##### **France Under the Old Regime and Revolution**

Study of the main social, economic and political developments in eighteenth-century France, with emphasis on the origins and course of the Revolution up to 1799. (Field b)  
Precludes additional credit for History 24.316.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.320

##### **Freedom and Power in the Western World, 1840-1880**

An intensive study of the political and social crises that dominated the Western world in the mid-nineteenth century, with a view to explaining how their outcomes shaped the relationship between individual liberty, social identity, and national power in the major states. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.321

##### **The Enlightenment**

An intellectual and cultural history of eighteenth-century Europe, with particular attention to Scotland, France and Italy. Representative themes include the shaping of historical knowledge, gender and sensibility; manners and private life; the literature of travel and ethnography, science and medicine. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.322★

##### **Capital Cities in the Modern World**

An examination of capital cities from the early modern period to the present. Ottawa and the provincial capitals of Canada will be a particular focus. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.324

##### **Colonial Frontier Societies**

An examination of four or five frontier societies in the eighteenth and nineteenth centuries, most of them Canadian, in which the presence of either European or North American metropolitan influences were critical to the character of development. (Field c or d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.325★

##### **History of Business in Canada: 1850-1980**

The place of business in Canadian society, economics and politics. The internal dynamics of Canadian business (organization, strategy, the rise of the manager), and its external implications (competition, foreign investment, business-government relations). (Field c)

Precludes additional credit for Business 42.468★.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.327★

##### **Introduction to Local History**

An examination of the methods and approaches that characterize recent British, French and North American writing on local history. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.328★

##### **Eastern Ontario Communities**

The local history of Eastern Ontario, with particular reference to the settlement and development of the Ottawa Valley in the nineteenth century. (Field c)

Prerequisite: History 24.327★ or permission of the Department.

Lectures three hours a week.

#### History 24.329★

##### **Canadian Urban History**

Introduction to urban growth and development in Canada. The historical basis of the urban pattern and its influence in Canada and the internal structure and institutions of Canadian cities. Ottawa is used as a case study. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.330★

##### **The History of Upper Canada to 1867**

An introduction to the economic, social and political development of Upper Canada to the time of Confederation. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.331★

##### **Quebec Since the 1860s**

A social, economic, cultural and intellectual history of Quebec with emphasis on the development of Quebec nationalism. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.332★

##### **The Atlantic Provinces**

Selected periods in the history of the four Atlantic Provinces. Themes covered include: settlement and population; economic trends; religious and cultural development; social and political evaluation. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.333★

##### **The History of Ontario, 1867-1967**

An introduction to the economic, social and political development of the Province of Ontario. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.334★

##### **Canada-United States Relations**

An examination of diplomatic, economic, cultural and military relations, with particular attention to the twentieth century. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.335

##### **History of Canadian Labour**

A social, economic, political and cultural history of workers responses to the evolving Canadian capitalist system, with emphasis on the twentieth century. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

#### History 24.336★

##### **Canadian External Relations**

The development of Canadian attitudes and policies toward external affairs, with emphasis on the twentieth century. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.337★

**Development and Underdevelopment in Atlantic Canada, 1660-1960**

Case-study analyses of the contrasts of development in different regions of all four Atlantic provinces from early colonial times to the modern period or permission of the Department. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.339★

**History of The Canadian West**

The economic, social and political evolution of Western Canada from European penetration to the present. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.341★

**The American Revolution**

A study of the causes and course of the movement leading to the independence of the United States. Particular emphasis is given to ideology, society, local issues and revolutionary organization. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.342★

**Expansion, Sectionalism and Reform: The United States, 1819 to 1850**

An examination of major developments in the United States from the Panic of 1819 to the Compromise of 1850, stressing the major social and political issues arising from territorial expansion, immigration and the reform impulse. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.344

**The United States Since Pearl Harbour**

Some principal themes in the history of the United States since 1941. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.346★

**The History of African-American Women from Slavery to the Civil Rights Movement**

An examination of aspects of the social, cultural, and political history of African-American women since the eighteenth century. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.347★

**Blacks in the United States**

A study of blacks in the United States, which concentrates on their experience under slavery and the recurring themes of integration and separatism after emancipation or permission of the Department. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.348

**American Intellectual History**

An examination of American thought from the colonial period to the twentieth century, with emphasis on political, social and religious ideas and their relation to American society and institutions. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.349

**History of United States Foreign Policy Since 1865**

A study of the United States as a world power in its international and domestic context. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.350★

**Canadian Immigration and Settlement: 1760-1875**

A study of immigration to and within British North America and of the adaptation of immigrants to colonial life between the Seven Years War and the early years of Confederation. (Field c)

Precludes additional credit for History 24.338★.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.351★

**Selected Topics in Canadian History**

A lecture course on a thematic area in Canadian history. The topic for 1998-99 is *Canadian Military History*. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.353

**Aboriginal Peoples of Canada**

The history of the aboriginal peoples of Canada, including cultural, political, and economic themes. (Field c)

Precludes additional credit for History 24.352★ and 24.353★.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.354

**Women and North American Society**

An examination of the changes that have taken place in the position of women in North America and the relationship of these changes to other social, economic and intellectual developments. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.356★

**Welfare and Poverty in Canadian History**

Analysis of the development of the Canadian welfare state. Chronological examination of welfare arrangements in Canada since the beginning of the nineteenth century; comparisons with selected western countries; discussions of the role of different social groups in policy formation. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.357★

**Canadian Immigration and Settlement Since 1875**

A study of immigration to Canada and of the adaptation of immigrants to their new environment from 1875. (Field c)

Precludes additional credit for History 24.338★.

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.358

**Society and Politics in England circa 1500-1914**

An enquiry into the relationship between society and politics in England. (Field a or b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.359★

**A History of the Habsburg Monarchy, 1526-1918**

The rise and fall of the multi-national empire of the Habsburgs from the unification of Austria, Bohemia, and Hungary to the collapse of the empire in the First World War. (Field a or b)



Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.360

**History of the U.S.S.R.**

A history of the politics, diplomacy, culture and society of Soviet Russia from 1917 to the end of the U.S.S.R. in 1991. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.362★

**Image and Actuality in the History of the Modern Canadian Family**

The transformations of family life in Canada since 1800, its varieties, its continuities, its relationship with political and economic institutions, and the changing status of its members. The construction of ideas about families will be discussed to underline the complex dynamic between images and practices. (Field c)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.363★

**Themes in Modern European Women's History**

An examination of themes in the social, cultural, and intellectual history of modern European women. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.364★

**Selected Topics in European History**

A lecture course on a thematic area in European history. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.365★

**The Soviet Union in International Affairs**

Study of Soviet diplomatic activity and foreign policy principles from the founding of Comintern in 1919 to the end of the U.S.S.R. in 1991. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.366★

**Modern East Central Europe**

A study of the political and diplomatic history of East Central Europe since 1848 with emphasis on Poland and Czechoslovakia. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.371★

**Selected Topics in International Economic History**

A lecture course on a thematic area of international economic relations. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.372

**History of the International Oil Industry**

Origins and development of the world's largest international business from the 1850's to the 1990's. Growth of transnational oil companies, inter-firm rivalry and cooperation, the opening of frontier producing regions, the rise of OPEC, oil as a factor in international conflict and war. (Field c or d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.374

**History of Mexico**

A survey of the historical forces which forged national identity from the Mexica to NAFTA. This course will examine political, social and economic structures to explain the particular sense of *mexicanidad* which characterizes the modern nation of Mexico. (Field d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.375★

**Women In Latin American History**

Historical overview of the lives of women in Latin America from the pre-Hispanic period to the twentieth century. The particular role women have played in the resistance movements, in informal political structure, and in the economy. (Field d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.376★

**Revolutions in Latin America**

The context of revolutions and attempted revolutions as well as the question of resistance will be examined in a chronological framework. While exploring the revolutionary movements of the colonial and nineteenth-century periods, the course will focus on the twentieth century experience. (Field d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.378★

**Reformation Europe**

A history of the Protestant and Catholic Reformations of the sixteenth century, with special emphasis on the theological disputes of the protagonists and the impact of these disputes on the social, political and cultural developments of the era. (Field a) (Also listed as Religion 34.378★).

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.380

**International History, 1914-1956**

A survey of international history in the First World War; peace-making 1919-1923; inter-war diplomacy and the origins of the Second World War; the relations of the powers in the Second World War; and post-war relations and the Cold War. (Field b)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.384★

**Selected Topics in Non-Western History**

A lecture course on a thematic area in non-Western history. (Field d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.385★

**Twentieth-Century China**

A political history of China from the 1911 Revolution to the present. Emphasis is placed on the development of Chinese communism and the People's Republic since 1949. (Field d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

History 24.386★

**Japan Since 1945**

A political, intellectual and economic history of Japan in the twentieth century, concentrating on the period since the end of the Pacific War. (Field d)

Prerequisite: A 200-level History course or permission of the Department.

Lectures three hours a week.

## History 24.388

**Historical Theory and Method**

An examination of questions concerning the nature and value of historical enquiry and the meaning of the course of history.

Prerequisite: A 200-level History course or permission of the Department.

Lectures two hours a week, discussion groups one hour a week.

## History 24.390

**Études Dirigées**

Un programme de lectures choisies et de travaux écrits dans le domaine de spécialisation d'un membre du département. Consultez le conseiller de Mention: français pour les sujets offerts.

For students of "Mention: français" only.

Permission of the "Mention: français" adviser required.

Precludes additional credit for History 24.391 ★.

Tutorials to be announced.

## History 24.391 ★

**Études Dirigées**

Voir History 24.390 pour description.

Permission of the "Mention: français" adviser required.

Precludes additional credit for History 24.390.

Tutorials to be announced.

## History 24.402

**Beginnings of Early Medieval Europe and the Near East**

A seminar on the transformation of the later Roman world into the politics of early Medieval Europe and the Near East. (Field I)

(Also listed as Classical Civilization 13.402.) Also offered at the graduate level, with additional or different requirements, as History 24.502, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.405

**Selected Problems in Medieval History**

A seminar on crime, criminal law, and society in medieval England. (Field I) Also offered at the graduate level, with additional or different requirements, as History 24.505, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.406

**Medieval Intellectual History**

An examination of selected aspects of medieval intellectual history. (Field I) Also offered at the graduate level, with additional or different requirements, as History 24.506, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.407

**Galileo and His Age**

Examination of the scientific and polemical works of the Italian physicist and astronomer Galileo Galilei (1564-1642). Special attention to the role of patronage, the Jesuits, biblical interpretation, and the circumstances that led to his trial and condemnation. (Field I) Also offered at the graduate level, with additional or different requirements, as History 24.507, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.412

**Machiavelli and His Age**

Examination of Machiavelli's political, historical, military, diplomatic, literary and personal writing. Topics include: ancient political thought, the Florentine historiographical tradition, the role of the Papacy in Italian politics, the influence of Venice. (Field I)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.417

**Selected Topics in the History of Eighteenth- and Nineteenth-Century France**

A seminar on selected problems and issues related to the history and historiography of France in the early modern and modern period. (Field II)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.421

**Science and Technology in the Canadian Experience**

An examination of the role and relationship of science and technology, including their social and engineering applications, in the Canadian historical experience. (Field V) Also offered at the graduate level, with additional or different requirements, as History 24.536, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.422

**The Maritimes in Transition, 1870s to 1920s**

A seminar on social and economic themes. (Field V)

Also offered at the graduate level, with additional or different requirements, as History 24.537, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.424

**Canadian Immigration and Ethnic History**

An examination of immigration and ethnic history in a selected period between the eighteenth and the twentieth centuries. (Field V) Also offered at the graduate level, with additional or different requirements, as History 24.530, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.426

**Perspectives on State Formation in Canada**

Exploration of selected problems of political history: the construction of official statistics, the language of governments, the invention of nationalisms, the making of political cultures, the autonomy of the state, the practices of bureaucrats and the political role of women. (Field V) Also offered at the graduate level, with additional or different requirements, as History 24.526, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.429

**Selected Topics in Greek and Roman History**

Intended for Honours students in Classics or History in their Third- or Fourth-year. (Field I) (Also listed as Classical Civilization 13.429.)

Prerequisites: Classical Civilization 13.290 (24.290) or 13.291 (24.291) or 13.321 ★ (24.309 ★) or 13.322 ★ (24.311 ★) and permission of the Department.

Seminar two hours a week.

## History 24.430

**Colonial Society in British North America**

A seminar involving a comparative examination of two or more of the British North American colonies. (Field V)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.431

**Canada from Confederation to the Great War**

A seminar examining political and social transformations of the nation-making phase of our history. (Field V)

Prerequisite: Permission of the Department.

Seminar three hours a week.



History 24.433

**Selected Problems in Canadian Business History, 1850-1980**

Combining extensive reading of the secondary literature with research in primary collections in the Ottawa area, this seminar focuses on central themes of business development in Canada since 1850. (Field v)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.434

**History of Northern Canada**

History of the Canadian north, including both provincial and territorial norths. Topics include native peoples, the fur trade, resource frontier development and Canadian concepts of "north". (Field v) Also offered at the graduate level, with additional or different requirements, as History 24.529, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.437

**Canada from War to War**

A seminar on the contours of Canadian development through the crises of war, reconstruction and depression. (Field v)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.438

**Studies in the History of Popular Culture**

Selected studies in the social history of culture in the age of mass society, including the popular arts, and the "culture of consumption". (Field v)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.439

**Modern Canada Since 1939**

Selected aspects of Canadian industrialization, urbanization, unionization, federalism, regionalism, feminism, nationalist ideologies, popular culture, and class and intellectual development. (Field v)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.440

**A Selected Period in United States History**

A seminar that considers the relationship among the political, social, economic and intellectual aspects of one of the following periods: (a) The American Revolution; (b) the early modern period, 1783-1816; (c) the Jacksonian era, 1819-1850; (d) the progressive era, 1896-1912; (e) the interwar years, 1920-1941; (f) since 1941. For 1998-99, the period will be (f). (Field vi)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.443

**The Religious Factor in the History of the United States**

A study of the role played by religious faith in the history of the United States, with special emphasis on political activities, the public philosophy, public policy and the American concept of national destiny. (Field vi)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.452

**Gender and the Culture of Protestantism**

Protestant women's religious expression and experience from the seventeenth through the nineteenth centuries in the British and transatlantic contexts. How gender relations, class, and race shaped women's piety and religious sensibility. (Field ii, iv, vi)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.453

**Problems in the Intellectual History of Britain, 1740-1850**

A seminar on selected themes in the intellectual and cultural history of Britain, with special attention to the development of ideas

of history and society. Representative topics include: the Scottish Enlightenment, the periodical press, the impact of the French Revolution. (Field ii, iv)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.454

**Selected Problems in the History of Women and the Family: the Pre-Industrial Atlantic World**

Selected problems relating to the pattern of women's lives from the mid-sixteenth to the early eighteenth century. Major focus on Britain and France, Quebec and Acadia; some attention to the experiences of Amerindian women, especially Micmac. (Field iv, v)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.455

**Selected Problems in Modern German History**

A seminar on selected problems relating to the political, social, economic, cultural, and intellectual developments of German-speaking central Europe in the modern era with emphasis on the Third Reich. (Field ii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.456

**Selected Themes in the History of Central Europe**

Selected problems relating to the history of the Habsburg Monarchy and its successor states. Focus on the cultural identity of central Europe, especially the problems of cultural integration in a multicultural society. (Field iii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.457

**Selected Problems in Tudor History**

A seminar designed to examine recent historical approaches to the problems of power and community in Tudor England in the light of some current social-philosophical theories of politics and society. (Field i, iv) Also offered at the graduate level, with additional or different requirements, as History 24.557, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.458

**Selected Problems in Nineteenth- and Twentieth-Century British Social History**

A seminar primarily concerned with themes in social history. (Field ii, iv)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.459

**Selected Problems in the History of Women and the Family: from the Industrial Revolution**

Selected problems relating to the changes in women's lives and in the structure of the family since the eighteenth century. Focus is on Britain, with some attention to North American and European experience for comparative purposes. (Field ii, iv)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.460

**Selected Problems in Russian History**

A seminar on selected problems relating to late Imperial Russia. (Field iii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

History 24.461

**Selected Problems in Soviet History**

A seminar on selected problems relating to the establishment and subsequent course of the Soviet Union. (Field iii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.471

**Selected Problems in International Economic History**

A seminar concerned with the political economy of international economic relations, their influence on patterns of national development, and their links with international politics. (Field vii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.476

**Selected Problems in Latin American History**

A seminar on the institutions, ideologies, and social structures which influenced the creation of national identities in Latin America. (Field vii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.480

**Selected Problems in the Diplomacy of the Great Powers, 1906-1945**

A seminar on selected problems in diplomatic history from the origins of the First World War. (Field ii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.485

**Selected Problems in East-Asian History**

A seminar on a selected topic in Chinese or Japanese history during the nineteenth and twentieth centuries. (Field vii)

Prerequisite: Permission of the Department.

Seminar three hours a week.

## History 24.498

**Mémoire de recherche**

Un travail écrit dans le domaine de spécialisation d'un membre du département. Consultez le conseiller de "Mention: français" pour les sujets offerts.

For students of "Mention: français" only.

Permission of the "Mention: français" adviser required.

Precludes additional credit for History 24.499.

## History 24.499 (2.0 credits)

**Honours Research Essay**

*B+* standing in History courses is expected. The subject for research is settled in consultation with the Department and a supervisor is assigned. Written outline of the project submitted to the Honours Committee one week before the last day for course changes. Oral examination. Not available to students in a Combined Honours program.

Precludes additional credit for History 24.498.

Prerequisites: Registration in the Fourth-year of Honours History program and permission of the Department.



# Humanities

## (Arts and Social Sciences)

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### Academic Administration

**Director,** Peter C. Emberley

**Academic Adviser,** B. Garner

### Teaching Staff

#### Professors

**R.C. Blockley**, B.A. (*Leicester*), M.A. (*McMaster*), Ph.D. (*Nottingham*) • **F.J. Hernandez**, Lic. Fa. Letras (*Barcelona*), M.A., Ph.D. (*Toronto*) • **Waller R. Newell**, B.A., M.A. (*Toronto*), M.Phil., Ph.D. (*Yale*)

#### Associate Professor

**W.R. Laird**, B.A. (*Concordia*), M.A., Ph.D. (*Toronto*)

#### Assistant Professors

**D. Gregory MacIsaac**, B.A. (*Dalhousie*), M.A. (*Notre Dame*) • **Noel A. Salmond**, B.F.A. (*Nova Scotia College of Art and Design*), M.A. (*Concordia*) • **Vasanthi Srinivasan**, B.A., M.A. (*Hyderabad*), M.Phil. (*Jnu, Delhi*), Ph.D. (*Carleton*) • **Micheline White**, B.A. (*Toronto*), M.A. (*Ottawa*)

#### Adjunct Research Professors

**Michel Gaullin** • **D.R. Gardner**

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### General Information

This program offers a challenging inter-disciplinary study of the humanities. At the heart of the Bachelor of Humanities is a core curriculum whose purpose is to provide students with a comprehensive, challenging, and common educational experience that is focused on humanity's record of outstanding achievement. The program's unique features include core seminars in which all members of the College participate, a number of designated courses across a range of disciplines, the choice of four concentrations (Liberal Arts, History, Philosophy, and English Literature), as well as a collegial atmosphere to supplement formal course work. Graduates of the program will receive the degree of Bachelor of Humanities (Honours). They will have acquired a rigorous education in the liberal arts and an understanding of important cultural and political accomplishments of the past. They will have developed well-honed skills of thoughtful reflection, conversation, written composition, and informed criticism, as well as significant proficiency in another language.

The College offers a four-year (Honours) program, consisting of 20.0 credits. Students will participate in a common academic enterprise by being members of a core seminar in each of their four years. These core seminars are central to the coherence of the curriculum and to the purposes of the program. In addition, the curriculum is based on a number of designated courses permitting an introduction to key events, texts, works, and commentaries in philosophy, literature, history, art and music, science, classical civilization, anthropology, religion, politics, and economics.

### Honours Program

The College of the Humanities offers a carefully coordinated four-year program in the liberal arts, leading to the degree of Bachelor of Humanities (Honours). The degree program comprises four Humanities Seminars and courses in Philosophy, English Literature, History, Languages, and related disciplines.

#### Program Requirements

The Bachelor of Humanities degree requires presentation of 20.0 credits and satisfactory performance in the Fourth-year oral examination.

Courses are taken in one of four concentrations: Liberal Arts, Philosophy, English Literature, and History. Four Humanities Seminars (Humanities 02.100, Humanities 02.200, Humanities 02.300, and Humanities 02.400) are common to all four concentrations. In addition, students must successfully complete a Second-year language credit specified by the College in consultation with the appropriate department, and a sight translation of a passage during the Fourth-year oral examination.

An oral examination, required of candidates for the Bachelor of Humanities, is taken in the Fourth or final year. Candidates will choose 12 primary and 12 important secondary texts on which to be examined, from a list provided them in their first year. They will also be required to make an oral sight translation of a passage from a language other than English. The examination is offered once a year at the end of the Winter term.

## The Humanities Seminars

The Humanities Seminars constitute a four-stage program of study that leads students from a consideration of fundamental elements of human consciousness (Humanities 02.100) into a sequential examination of important themes in the major epochs in western civilization: Antiquity to the Middle Ages (Humanities 02.200), Renaissance to Enlightenment (Humanities 02.300), Napoleonic Empire to the Present (Humanities 02.400). The seminars are defined under the categories "Myth and Symbol," "Reason and Revelation," "Culture and Imagination," "Science, Language, and Power." Disciplinary perspective and thematic emphasis shift from one seminar to another. Humanities 02.100 concentrates primarily on religion and mythology, Humanities 02.200 on philosophy, Humanities 02.300 on literature and the fine arts, and Humanities 02.400 on history. Each seminar consists of three hours of lectures and two hours of tutorials each week and entails study of a select number of primary texts (for example, Homer's *Iliad* and *Odyssey*, Plato's *Republic*, St. Augustine's *City of God*, the *Koran*, Dante's *Divine Comedy*, Titian's *Bacchus* and *Ariadne*, Shakespeare's *King Lear*, Mozart's *The Magic Flute*, Rousseau's *Emile*, Beethoven's *Eroica Symphony*, Mary Wollstonecraft's *A Vindication of the Rights of Woman*, Marx's *Communist Manifesto*, Thomas Mann's *Doktor Faustus*, Margaret Laurence's *The Diviners*) and an examination of important secondary commentaries (such as George Grant's *Lament for a Nation*, Harold Innis's *Empire and Communications*).

## Program Concentrations

Upon entering the program, candidates for the Bachelor of Humanities degree choose one of four concentrations of courses as their program of study.

The Liberal Arts Concentration (Option One) is designed for students who wish to receive a comprehensive education in the humanities. The Liberal Arts Concentration comprises the Humanities Seminars and 16.0 additional prescribed credits. In the Second, Third, and Fourth years, students will have the choice of one elective credit. Under certain circumstances, and with the permission of the College Academic Adviser, students in the Liberal Arts concentration may offer a maximum of 2.0 credits in performance as their elective credits. Please note that these credits may not be transferred if students transfer to other programs.

The remaining three concentrations are designed for students who wish to receive a balanced background in the humanities with a higher degree of specialization in one discipline. These three concentrations, in most cases satisfying the requirements for a combined Honours degree in the chosen discipline, will prepare students for admission to graduate studies in that discipline.

In consultation with the College Academic Adviser, students may elect to pursue a concentration in one or more languages. The number of credits obtained in a language concentration is the same as that which is normally attained in a combined honours program. The College Academic Adviser has several templates for such a course of study.

## Admission Requirements

Admission to the program is by demonstrated scholarly achievement and potential. In addition to applying to Carleton University through the Ontario Universities Application Centre, prospective students must submit a portfolio consisting of a) a one-page statement of why they wish to enter the program, b) a 750-word essay based on reflections on the theme or book chosen each year by the College, and c) a sample of a written exercise. The portfolio should be submitted to the College of Humanities, Carleton University by April 1. The final decision concerning acceptance normally takes place after an interview with a representative of the College. Students wishing to enter the program normally must have the OSSD, or the equivalent, including six OACs (or their equivalent), with an overall average of 80 percent or better. Since program enrolment is limited, satisfying the minimum admission requirements does not guarantee admission to the program. At the discretion of the College's Committee

on Admissions, students who do not meet the 80 percent average may nonetheless be admitted to the program if their portfolio and interview are deemed outstanding.

## Advanced Standing and Transfer of Credits

Applications for admission with advanced standing to the program leading to the Bachelor of Humanities degree will be evaluated individually. Advanced standing will be granted only for those courses that are determined to be appropriate for the Bachelor of Humanities program. On admission to the Bachelor of Humanities program, students will not receive credit for courses graded below C-.

## Academic Standing and Continuation in the Program

Students are considered to be in good standing if they meet the following criteria:

1. A CI of 6.00;
2. a cumulative GPA of 8.0;
3. a grade of B- or better in each of the Humanities Seminars;
4. no grade of D, F, or Abs in more than 1.0 credit per calendar year.
5. a minimum of 4.0 credits must be completed by the end of the academic year, i.e. at the end of the summer session.

Calculation of the GPA is based on all successfully completed courses from all academic years in which the student has been registered in the Bachelor of Humanities program. In the case of repeated courses, the most recent grade will be used to compute the GPA.

## Graduation Requirements

In order to fulfil the minimum graduation requirements for the degree of Bachelor of Humanities, a candidate must have met all the program requirements for the First to Fourth years, inclusive, with a cumulative GPA of 8.0 or better. In addition, the candidate must have achieved a grade of *Sat* in the Fourth-year oral examination.

In order to graduate, students must fulfil all University graduation regulations (see p. 49) in addition to all program regulations.

## Program Concentrations

There are four concentrations available within the Humanities program.

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### Option One: Liberal Arts Concentration

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#### First Year: Myth and Symbol

- Humanities 02.100 Myth and Symbol
- Classical Civilization 13.200 Classical Mythology
- Language Requirement: Normally Greek 15.220★ and 15.221★, or Latin 16.220★ and 16.221★, or French 20.160 or 01.108, or German 22.205, or Italian 26.200, or Religion 34.292, or Russian 36.202, or Spanish 38.203, chosen in consultation with the College Academic Adviser. Students may need to fulfil a prerequisite before taking these courses.
- Religion 34.126 Interpretations of Religion
- Anthropology 54.100 Introduction to Anthropology

#### Second Year: Reason and Revelation

- Humanities 02.200 Philosophy: Antiquity to the Middle Ages



## Humanities

- Classics 13.209 Greek and Roman Literary Genres  
or  
History 24.221 History of Science
- History 24.210 Introduction to the History of Ideas  
or  
Philosophy 32.206★ Greek Philosophy: Plato and Aristotle  
and
- Philosophy 32.207★ Hellenistic and Early Medieval Philosophy  
or  
Political Science 47.230 History of Political Thought

- Religion 34.257★ Christianity  
and  
Religion 34.258★ Introduction to Judaism and the Jewish People  
or  
Religion 34.259★ Introduction to Islam

And 1.0 credit to be determined in consultation with the College Advisor

### Option One: Liberal Arts Concentration

First Year	Second Year	Third Year	Fourth Year
Humanities 02.100	Humanities 02.200	Humanities 02.300	Humanities 02.400
Classics 13.200	Classical Civilization 13.209 or History 24.221	Humanities 02.310	Humanities 02.410
Language Requirement**	History 24.210 or Philosophy 32.206★ and 32.207★ or Political Science 47.230	Humanities 02.320	History 24.310
Religion 34.126	Religion 34.257★ and 34.258★ or 34.259★	English 18.230	Philosophy 32.255★ and 32.315★ or Philosophy 32.306★ and 32.307★ or Philosophy 32.314★ and 32.402★
Anthropology 54.100	1.0 credit*	1.0 credit*	1.0 credit*

\*To be determined in consultation with the College Advisor.

\*\*Language Requirement: Normally Greek 15.220★ and 15.221★, or Latin 16.220★ and 16.221★, or French 20.160 or 01.108, or German 22.205, or Italian 26.200, or Religion 34.292, or Russian 36.202, or Spanish 38.203, chosen in consultation with the College Academic Adviser. Students may need to fulfil a prerequisite before taking these courses.

### Third Year: Culture and Imagination

- Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
- Humanities 02.310 Art, Music, Architecture: Renaissance to Romanticism
- Humanities 02.320 The Literature of Continental Europe
- English 18.230 British Literature from the Renaissance to the Romantics
- And 1.0 credit to be determined in consultation with the College Advisor.

### Fourth Year: Science, Language and Power

- Humanities 02.400 History: Napoleonic Empire to the Present
  - Humanities 02.410 Principles of Modern Science
  - History 24.310
  - Philosophy 32.255★ Analytic Philosophy and 32.315★  
or  
Philosophy 32.306★ German Idealism  
and  
Philosophy 32.307★ Reactions to German Idealism  
or  
Philosophy 32.314★ The Roots of Analytic Philosophy  
and  
Philosophy 32.402★ Philosophy of Social Science
- And 1.0 credit to be determined in consultation with the College Advisor

### Option Two: Philosophy Concentration

#### First Year: Myth and Symbol

- Humanities 02.100
- Classics 13.200 or Religion 34.126
- Language requirement: Normally Greek 15.220★ and 15.221★, or Latin 16.220★ and 16.221★, or French 20.160 or 01.108, or German 22.205, or Italian 26.200, or Religion 34.292, or Russian 36.202, or Spanish 38.203, chosen in consultation with the College Academic Adviser. Students may need to fulfil a prerequisite before taking these courses.
- Philosophy 32.160
- Anthropology 54.100

#### Second Year: Reason and Revelation

- Humanities 02.200
- Classical Civilization 13.209 or History 24.221
- History 24.210 or Philosophy 32.206★ and 32.207★ or Political Science 47.230
- Philosophy 32.201★ and Philosophy 32.286★; or Philosophy 32.206★ and 32.207★; or Philosophy 32.208★ and 32.301★; or Philosophy 32.260
- Religion 34.257★ and Religion 34.258★ or Religion 34.259★

### Third Year: Culture and Imagination

- Humanities 02.300
- Humanities 02.310
- Humanities 02.320
- Philosophy 32.209★ and 32.304★
- Philosophy 32.340

### Fourth Year: Science, Language and Power

- Humanities 02.400
- Humanities 02.410
- History 24.310 or Philosophy 32.255★ and 32.315★
- Philosophy 32.306★ and 32.307★; or Philosophy 32.314★ and Philosophy 32.402★
- Political Science 47.435; or Political Science 47.436★ and 47.437★; or two of: Philosophy 32.401★, 32.441★, 32.451★

### Option Three: English Literature Concentration

#### First Year: Myth and Symbol

- Humanities 02.100
- Classical Civilization 13.200
- English 18.208
- Language Requirement: Normally Greek 15.220★ and 15.221★, or Latin 16.220★ and 16.221★, or French 20.160 or 01.108, or German 22.205, or Italian 26.200, or Religion 34.292, or Russian 36.202, or Spanish 38.203, chosen in consultation with the College Academic Adviser. Students may need to fulfil a prerequisite before taking these courses.
- Religion 34.126 or Anthropology 54.100

#### Second Year: Reason and Revelation

- Humanities 02.200
- English 18.209
- English 18.322★ and 18.428★
- History 24.210 or Philosophy 32.206★ and 32.207★ or Political Science 47.230
- Religion 34.257★ and Religion 34.258★ or Religion 34.259★

#### Third Year: Culture and Imagination

- Humanities 02.300
- Humanities 02.310
- Humanities 02.320
- English 18.230
- English 18.332★ and 18.342★ or English 18.334

#### Fourth Year: Science, Language and Power

- Humanities 02.400
- Humanities 02.410
- 1.0 credit from: English 18.264, English 18.352, English 18.353★, English 18.361★, English 18.363★
- 1.0 credit from: English 18.482★, English 18.483, English 18.486★, English 18.488★
- History 24.310 or Philosophy 32.255★ and 32.315★, or Philosophy 32.306★ and 32.307★ or Philosophy 32.314★ and 32.402★

### Option Four: History Concentration

#### First Year: Myth and Symbol

- Humanities 02.100
- Classical Civilization 13.200 or Religion 34.126
- Language Requirement: Normally Greek 15.220★ and 15.221★, or Latin 16.220★ and 16.221★, or French 20.160 or 01.108, or German 22.205, or Italian 26.200, or Religion 34.292, or Russian 36.202, or Spanish 38.203, chosen in consultation with the College Academic Adviser. Students may need to fulfil a prerequisite before taking these courses.
- History 24.101
- Anthropology 54.100

#### Second Year: Reason and Revelation

- Humanities 02.200
- Classical Civilization 13.209 or History 24.221
- Classics 13.290 or Classics 13.291 or History 24.306★ and History 24.307★
- History 24.210 or Philosophy 32.206★ and 32.207★ or Political Science 47.230
- Religion 34.257★ and Religion 34.258★ or Religion 34.259★

#### Third Year: Culture and Imagination

- Humanities 02.300
- Humanities 02.310
- Humanities 02.320
- English 18.230
- History 24.315★ and History 24.378★ or History 24.223 or History 24.388

#### Fourth Year: Science, Language and Power

- Humanities 02.400
- Humanities 02.410 or Philosophy 32.255★ and 32.315★ or Philosophy 32.306★ and 32.307★ or Philosophy 32.314★; and Philosophy 32.402★
- History 24.310
- 2.0 History credits at the 400-level

### Courses

Not of all the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

#### Humanities 02.100

##### Myth and Symbol

Recurring symbols in myth, epic and ritual representing the relation between the sacred and the profane, the origin of the cosmos, the basis of community, and formative human experiences. Primary sources drawn from ancient India and China, Greek epic, Hebrew Scripture, and aboriginal practices.

Lectures three hours a week and tutorials two hours a week.

#### Humanities 02.200

##### Reason and Revelation: Antiquity to the Middle Ages

Philosophical and theological speculation in the Western world. Themes include knowledge and faith, justice and charity, the origin of the university, and the rise and fall of empires. Primary sources are drawn from Greek and Roman works, patristic theology, Muslim Scripture, medieval philosophy and literature.



Prerequisites: Humanities 02.100 and good standing in the Bachelor of Humanities program.

Lectures three hours a week and tutorials two hours a week.

**Humanities 02.300**

**Culture and Imagination: Renaissance to Enlightenment**

Forms of literary, musical, artistic, theatrical, and architectural expression. Predominant cultural movements, the birth of modern rationalism, the social sciences, and the creation of complex secular organizations. Sources drawn from reformation theology, renaissance literature and art, baroque and classical music, and French and German literature.

Prerequisites: Humanities 02.200 and good standing in the Bachelor of Humanities program.

Lectures three hours a week and tutorials two hours a week.

**Humanities 02.310**

**Art, Music, Architecture: Renaissance to Romanticism**

An examination of the major artistic, musical, and architectural movements since the fifteenth century. Students will gain familiarity with the significant cultural works and monuments, as well as the theoretical understanding which guided their composition and construction.

Lectures three hours a week.

**Humanities 02.320**

**The Literature of Continental Europe**

Major movements and works from Dante's Divine Comedy through Voltaire's Candide. Themes include the New Humanism vs. old Chivalry in the Renaissance and Baroque periods; the rise of the modern novel and drama; reason, nature, and the Enlightenment project.

Prerequisites: Humanities 02.200 and Third-year standing in the B.Humanities program.

Lectures three hours a week

**Humanities 02.400**

**Science, Language, and Power: Napoleonic Empire to the Present**

Politics, ideology, science, and technology of Western modernity. New forms of social authority, politics of revolution, philosophy of language, evolution of the nation-state, the rise of psychoanalysis. Sources drawn from German philosophy, economics, sociology, and psychoanalysis, and from the works of modernism and post-modernism.

Prerequisites: Humanities 02.300 and good standing in the Bachelor of Humanities program.

Lectures three hours a week and tutorials two hours a week.

**Humanities 02.410**

**Principles of Modern Science**

A detailed investigation through laboratory experimentation and theoretical inquiry of the major principles of modern science. Students will acquire an understanding of the significant issues confronted in modern biology, physics, and chemistry.

Lectures two hours a week, laboratories two hours a week, and discussion groups one hour a week.

# Industrial Design

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## Academic Administration

Director, M. de Leeuw

Director, Centre for Industrial Design Research, J. Giard

## Teaching Staff

Professor Emeritus

W. Gilles, *D.Eng.*

Professors

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Associate Professors

B.P. Burns, *B.Sc. (City University, London), M.A. (Central School of Art and Design), M.Phil. (Leicester Polytechnic)*  
• L. Frankel, *B.F.A. (Nova Scotia College of Art and Design), M.A. (Dusseldorf Kunstakademie [Art Academy]), M.E.Des. (Calgary) Diploma Crafts & Design (Sheridan College)*

Assistant Professor

M. de Leeuw, *B.Sc. (Waterloo), B.I.D. (Carleton), M.B.A. (Ottawa)*

Adjunct Research Professor

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Sessional Lecturers

S. Field • J. Mahan • T. Moore

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## General Information

Industrial design\* is a creative activity, which aims to determine the formal qualities of objects produced by industry. These formal qualities include the external features, but are principally those structural and functional relationships that convert a system to a coherent unit, both from the point of view of the producer and of the user.

Industrial design tends to embrace all aspects of the human environment that are conditioned by industrial production. In the future, the traditional activity of design for growth may continue to be essential. It will be necessary, however, to develop a design activity that contributes to the regulating of growth processes, the conservation of resources and the protection of the environment.

\* As defined by the International Council of Societies of Industrial Design.

## Bachelor of Industrial Design Degree Program

In September 1973, Carleton University initiated the First year of a new four-year program leading to the Bachelor of Industrial Design degree.

The Bachelor of Industrial Design degree is awarded on successful completion of the four-year program of studies. The program is structured to meet the requirements of the developing profession of industrial design. This implies an education with a solid general background, enabling the designer to communicate with experts in other disciplines. It also implies development of expertise in designing for one or more specific sectors in the wide field of application of industrial design. The program of studies was initiated as a joint venture of the Faculty of Engineering and the School of Architecture.

## Admission Requirements

### First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs. The six OACs must include a core of Physics, Algebra and Geometry, and Calculus with an average of 65 percent or better. It is strongly recommended that all applicants also have OACs in Chemistry and English.

In order to compete successfully for admission in this limited enrolment program, it is strongly recommended that the candidate present a portfolio of any kind of work that could demonstrate the applicant's creativity and aptitude for the study of industrial design. Candidates are normally expected to make arrangements



for a personal interview at the School. Such an interview will give the School of Industrial Design a clearer idea of the seriousness of the candidate and afford the candidate an opportunity to see and learn actively about the program of the School of Industrial Design.

### Advanced Standing and Transfer of Credits

Applicants seeking admission with advanced standing to the Bachelor of Industrial Design program will be evaluated on an individual basis. Applicants may not be required to present any or all of the OAC prerequisites if it is determined that their previous post-secondary studies are sufficient preparation for the program.

### Mature Applicants

Persons who lack the normal entrance requirements as published in this Calendar but who have been away from full-time studies for a minimum of two years and who are 21 years of age or over by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program.

### Selective Admission

It should be noted that the number of student spaces in the School of Industrial Design is limited. Because of this, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission, therefore, will be on a selective basis with preference given to those candidates who show the highest promise of success in the program. ✓

### Readmission

Students who have been absent from the program for one Fall/Winter session are normally required to apply for readmission before registration. Exceptions will be made in the case of students holding either a Letter of Permission (p. 46) or written approval from the School of Industrial Design.

Former students who have forfeited their undergraduate status must request readmission by following the normal admission procedures, including the submission of an updated portfolio of work.

First Year		Lectures and Tutorials		Laboratory and Studio Work	
Term		Fall	Winter	Fall	Winter
43.100	Introduction to Economics	3	3	-	-
49.100	Introductory Psychology	3	3	-	-
69.107★	Elementary Calculus I	4	-	-	-
69.117★	Elementary Algebra	-	4	-	-
75.104★	Introductory Physics for Engineering	-	3	-	3
85.100★	Introduction to Industrial Design	3	-	-	-
85.101★	Industrial Design Analysis	-	3	-	-
85.130★	Projects IA	2	-	4	-
85.131★	Projects IB	-	2	-	4
91.111★	Mechanics - Statics	3	-	3	-
Hours per week		18	18	7	7

Second Year		Lectures and Tutorials		Laboratory and Studio Work	
Term		Fall	Winter	Fall	Winter
49.372★	Perception	-	3	-	-
85.211★	Mass-Production Technology for Industrial Design A	3	-	3	-
85.212★	Mass-Production Technology for Industrial Design B	-	3	-	3
85.215★	Computer Applications for Industrial Design	3	-	-	-
85.231	Projects IIA	4	-	8	-
85.232★	Projects IIB	-	2	-	4
85.260★	Ergonomics for Industrial Design	-	3	-	-
Electives (Note a)		3	3	(3)	(3)
Electives (Note b)		3	-	-	-
Hours per week		16	14	11 (14)	7 (10)

**Note a:** Course(s) to a total of 1.0 credit chosen from Architecture, Business, Computer Science, Engineering, Psychology or Technology, Science and Environment.

**Note b:** Total course value of 0.5 credit.

Third Year	Lectures and Tutorials		Laboratory and Studio Work	
	Fall	Winter	Fall	Winter
42.224★ Basic Marketing	-	3	-	-
85.330 Projects IIIA (Note a)	4	-	8	-
85.331 Projects IIIB (Note a)	-	4	-	8
85.352★ Contextual Nature of Products	-	3	-	-
85.361★ Industrial Design and the User	3	-	3	-
Electives (Note b)	6	3	3	3
Hours per week	13	13	14	11

**Note a:** The project courses, although given in one term each, are counted as full courses with 1.0 credit each.

**Note b:** Total course value to 1.5 credits.

Fourth Year	Lectures and Tutorials		Laboratory and Studio Work	
	Fall	Winter	Fall	Winter
85.400★ Professional Practice in Industrial Design	-	3	-	-
85.401★ Industrial Design Seminar (Note a)	3	-	-	-
85.430 Major Projects (Note b)	2	2	10	10
85.431★ Minor Projects A	2	-	4	-
85.432★ Minor Projects B	-	2	-	4
85.440★ Industrial Practice Internship Field Reports	3	-	-	-
Electives (Note c)	3	3	-	-
Hours per week	13	10	14	14

**Note a:** Although the Industrial Design Seminar takes place in the Winter term, the preparatory work that students are required to do must be completed in the Fall term, and therefore requires registration in that term.

**Note b:** The Major Industrial Design Projects course has a value of 2.0 credits.

**Note c:** The electives must be chosen in consultation with the School on the following principles:

- (i) the elective chosen should serve to deepen the student's understanding of fields related to Industrial Design or disciplines that are relevant for industrial designers;
- (ii) the elective chosen should preferably be an advanced course;
- (iii) the elective chosen should preferably be related to the Industrial Design projects and provide basic and/or actual information for these projects.

### Industrial Practice Internship

In order to provide the student with a realistic view of the possibilities and limitations of industry, and to establish and maintain good contacts and communication among the School of Industrial Design, the students and industry, the student in Industrial Design is required to spend a period of time as an intern in industry.

These periods of industrial practice internship are to be taken prior to graduation. Students should find an internship on their own initiative and confirm its suitability with the faculty member involved.

If the industrial practice internship is not completed in time or if it is not proved successful, the student will not be awarded the Bachelor of Industrial Design degree until the missing internship is completed and proof of satisfactory results is given.

During the industrial practice internship, a study of the relationship between industrial design and the technology, production process, or functional issues at hand will be undertaken. A report is to be submitted to the School, to be filed in the technical data facilities of the School of Industrial Design and made accessible to other students. See course Industrial Design 85.440 ★.

### Industrial Design Projects

The Industrial Design projects in the First, Second, Third and Fourth years will represent either real or simulated situations to be

developed to the stage of drawings, models, full-scale mock-ups or simulated finished products, as appropriate.

The design experience in Industrial Design projects synthesizes and integrates all the other course work and draws on the resources from those courses, including the disciplinary expertise of the staff. It should also attempt to explore and exploit knowledge available on campus and from other institutions.

Industrial design projects, including research-oriented projects, will only be acknowledged when they are aimed at predetermined, concrete goals and, preferably, result in objects to be made by industry.

The usual pattern of activities in the execution of an Industrial Design project is, in its simplest form, composed of three phases:

1. an analytical informative phase;
2. a creative or formative phase;
3. a descriptive or communicative phase.

Progress within this pattern of activities is made by feedback and feed-forward with intermediate evaluations. A project will not be considered complete if any of the three major phases has not been documented and evaluated.

The student will normally be required to keep a record of working hours spent on the project. This record must be available for inspection, and must be one of the documents submitted for examination.



The School of Industrial Design may conditionally approve an intended collaboration of students in the execution of Industrial Design projects provided that proper means of evaluation and examination are built into the project to ensure the identification of each student's contribution.

Industrial Design projects will be reviewed or examined after each of the phases and on the planned and agreed deadlines. Students who do not meet the deadlines for submission of project work will be considered to have withdrawn from examination.

The execution of Industrial Design projects will require professional equipment for sketching, drawing, modelling, etc. A list of recommended equipment is available from the instructors of each project course, where applicable. Other possible costs such as travel expenses, will cause the total expenditure for projects to vary considerably.

Resulting documents, sketches, drawings, models, etc. from Industrial Design projects must be retained by the student for a minimum period of two years after production. During this period, the student must have these results available in good condition for the School of Industrial Design for exhibition, display or publication purposes. During this time, the student will be required to advise the Director of the School, well in advance, about any transaction, exhibition, display or publication, that will involve these results.

Students are not allowed to use the results of Industrial Design projects for commercial purposes without written permission of the Director of the School of Industrial Design.

### Fourth-Year Industrial Design Projects

All regulations and arrangements as described under "Industrial Design Projects" apply to the Fourth-year projects. Over and above these regulations, Fourth-year Industrial Design projects are subject to the following:

In order to reflect the actual situation of the professional industrial designer, the student is required to undertake more than one project to be executed simultaneously in Fourth Year.

Therefore, Fourth-year students are required to undertake Industrial Design 85.430, Major Projects, 85.431 ★, Minor Projects A, and 85.432 ★, Minor Projects B in the same academic year.

Fourth-year Industrial Design projects are conducted, supervised, administered and examined by the Industrial Design Projects Committee, reporting to the Faculty Board of the School of Industrial Design.

The subjects or themes of Industrial Design projects in 85.430 are determined by agreement between the student and the Industrial Design Projects Committee. This agreement should be reached before the commencement of the Fall term in the Fourth year.

A student who chooses to do an Industrial Design project that is based on special techniques or technologies, is required to propose an expert in that special field to be present at the evaluations of the project to assist the Industrial Design Projects Committee.

Students registering in Fourth year, who have failed to reach an agreement with the Industrial Design Projects Committee before the commencement of the Fall term will normally be given a subject or theme by the Committee.

The specified record of working hours spent on Fourth-year Industrial Design projects must be available for inspection by the Committee at any time and be among the documents to be submitted at the final examination.

## General Information

### Course Pattern

The program of study in Industrial Design is necessarily structured to meet the requirements in education and training for a professional career in industrial design.

For purposes of scheduling, each student is considered as being in a particular year of the program. In order to move through the

program, a student must not be deficient in the Industrial Design project course(s) and in no more than one of the other courses. This requirement does not relate to a student's academic status, but only to the nominal year designation. However, a student who is taking courses in Fourth year while designated as being in Third year, has the responsibility for satisfactorily resolving any prerequisite deficiencies and difficulties in the course program.

### Course Level

The year level of a course can be read from the first digit to the right of the decimal in the course number; for example, the course Industrial Design 85.331 is at Third-year level and 85.430 is at Fourth-year level. This indicates the general academic background required. Specific prerequisites are also given where appropriate. Students may take courses at a year level higher than their current registration; they are advised, however, to consult the course instructor if they have doubts regarding their background preparation. In some cases, the School of Industrial Design may also be able to waive specific prerequisites.

### Electives

The School of Industrial Design offers elective courses under its own jurisdiction. It is strongly recommended, however, that students in Industrial Design also choose from the wide variety of courses in the humanities, social sciences, engineering or multidisciplinary courses offered in the University. Industrial Design projects usually represent complex situations which require background information that often will be better understood when supported by appropriate elective courses in other disciplines.

### Qualifying-University Year Courses

Qualifying-University year courses cannot be used to satisfy any of the elective requirements in any year of the regular course pattern.

### Student Responsibility

The student is responsible for knowing the regulations of the School of Industrial Design and for complying with them. Any exceptions to the regulations must be approved in writing by the School of Industrial Design Student Standing and Promotion Committee.

### Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about ITV refer to p. 64.

### Carleton Industrial Design Students' Association

CIDSA organizes social and academic events to develop esprit de corps among Industrial Design students and faculty. The association also represents students within the School of Industrial Design regarding academic and/or policy matters to the University and the profession.

### Grading System

Standing in courses will be determined by the School and will be shown by alphabetical grades. (see p. 48)

Notations to represent special circumstances are as follows:

#### Aeg

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Committee on



**Student Standing and Promotion of the School of Industrial Design** only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

### **F**

**Failure:** no academic credit.

### **Wdn**

**Withdrawn in good standing:** no academic credit.

### **Abs**

**Absent** from formally scheduled final examinations where the necessary term work has been completed. No academic credit.

### **Def**

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Committee on Student Standing and Promotion of the School of Industrial Design for deferred examination privileges. Such applications must:

1. be made in writing to the Engineering Faculty Registrar's Office not later than one week after the date of the examination; and
2. be fully supported in the case of illness by a medical certificate or by appropriate documents in other cases.

## **Academic Standing, Promotion and Probation**

The academic standing of each student in the B.I.D. program will be reviewed prior to fall registration. At that time, the student's previous record, including courses from the preceding Summer session, will be considered.

GPA's and cumulative GPA's determine the academic standing of a student. They are calculated on the basis of course credits. Normally, a full (two-term) course has a value of 1.0 credit and a half (one-term) course, indicated by a ★ after the course number, has a value of 0.5 credit. In the B.I.D. program, the courses Industrial Design 85.231, 85.330 and 85.331, although offered in one term, have a course value equivalent to 1.0 credit each. The course Industrial Design 85.430 has a course value equivalent to 2.0 credits.

The 12-grade point system is set out on p. 48. The grade points earned in any specific course are determined by multiplying the grade points corresponding to the grade by the credit value of the course. Thus an A+ in a half-credit course will earn the student 6.0 grade points, while an A+ in a two-credit course would be worth 24 grade points. GPA's are calculated by dividing the total accumulated grade points by the total credits.

To achieve satisfactory academic standing, the student must:

1. meet the GPA for the year of study just completed;
2. meet the cumulative GPA required for all courses taken as part of the Bachelor of Industrial Design program.

The required cumulative GPA and the GPA for the year are:

- 2.5 after one year of study;
- 2.8 after two years of study;
- 3.1 after three years of study;
- 3.4 after four years of study.

A year of study, as used here, refers to the student's period of study and not to the program year defined in the previous section of these regulations. A year's GPA is based on all courses taken during one Academic Year; calculation of the cumulative GPA is based on the courses from all Academic Years in which the student has been registered in Industrial Design. The most recent grade obtained in each course will be used to compute the GPA.

3. have completed all course requirements of First and Second years to be eligible to proceed to Third-year project courses. Students must have completed all industrial design courses of third year to proceed to Fourth-year project courses.

4. not receive a grade of *F* or *Abs* in the year of study just completed in more courses than the allowable numbers listed below:

Number of Full Credit Equivalents Taken	Maximum Number of Full Credit Equivalent <i>F</i> or <i>Abs</i> Allowed
0.5—1.0	0
1.5—2.5	0.5
3.0—4.0	1.0
4.5—5.5	1.5
6.0 or more	2.0

5. achieve a GPA of 4.0 or better in each of the project courses.

After a review of grades, a student who no longer meets the requirements for satisfactory academic standing, will be placed on academic probation. A student may be on academic probation only once in the Bachelor of Industrial Design program.

A student on probation for reasons other than failure of a project course will not be allowed to register in any project courses.

A student on probation will be required to successfully complete the following courses from the previous year of registration:

1. any project course of the core program for which a grade less than C- was obtained;
2. any other core course that was failed.

Moreover, the student will be required to repeat or to replace any elective course of the previous year's registration that was failed.

A student on probation who fails to meet these conditions will lose undergraduate status and will be ineligible for future registration in the B.I.D. program.

## **Students with Advanced Standing**

Students admitted with advanced standing must obtain an average appropriate to their level of admission but only those courses taken at Carleton University will be included in the evaluation.

## **Graduation**

In order to fulfil the minimum graduation requirements for the degree of Bachelor of Industrial Design, a candidate must have met all the course requirements of the First to Fourth years, inclusive, with a cumulative GPA of 3.4 or better. In addition, the candidate must have achieved a GPA of 4.0 or better in each of the Industrial Design project courses and be recommended by the School of Industrial Design.

In order to graduate, students must fulfil all University graduation regulations in addition to all School regulations. (See p. 49.)

## **Degrees with Distinction**

Upon recommendation of the School of Industrial Design, the notation "with High Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To be considered for this recommendation, the candidate is expected to obtain a GPA of 10.0 or better in the course requirements of the final year and, in addition, a GPA of 7.8 or better in the course requirements of the First to Fourth years, inclusive.

Upon recommendation of the School of Industrial Design, the notation "with Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To be considered for this recommendation, the candidate is expected to obtain a GPA of 9.0 or better in the course requirements of the final year and, in addition, a GPA of 6.6 or better in the course requirements of the First to Fourth years, inclusive.



## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Industrial Design 85.100★

#### Introduction to Industrial Design

The theoretical background of industrial design: definitions of design and industrial design; its nature and its history; aspects of manufactured objects; design methods; design management in industry; professional practice and industrial design promotion, nationally and internationally. (Also listed as Architecture 76.206★.)

Lectures three hours a week.

### Industrial Design 85.101★

#### Industrial Design Analysis

Various aspects of industrial design practice, including: the principles of product analysis; the object/context relationship; the role of the manufactured object; and design analysis from the perspective of the user, the maker and the designer. (Also listed as Architecture 76.211★.)

Prerequisite: Industrial Design 85.100★ (Architecture 76.206★).

Lectures three hours a week.

### Industrial Design 85.130★

#### Projects IA

An introduction to the techniques of industrial design including drawing and sketching as an aid to design, basics of line and shape, ideation and visualization, product drawing, presentation techniques, laboratory equipment and practices, introduction to the design process.

Prerequisite: Industrial Design 85.100★ (may be taken concurrently).

Lectures and tutorials two hours a week, studio four hours a week.

### Industrial Design 85.131★

#### Projects IB

Further aspects of industrial design theory and practice, more specifically those dealing with principles of product development and fundamentals of form and colour; case studies. Emphasis is on creative problem-solving techniques and application of visual communication techniques in design; introduction to fundamentals of photography.

Prerequisite: Industrial Design 85.130★.

Lectures and tutorials two hours a week, studio four hours a week.

### Industrial Design 85.211★

#### Mass Production Technology for Industrial Design A

Transformation techniques applied to manufacturing materials. Part-design requirements and cost factors for manufacturing processes. Influences and role of assembly, finishing, production tooling, and costing.

Precludes additional credit for Industrial Design 85.210.

Prerequisites: Industrial Design 85.100★, 85.130★.

Lecture and tutorials three hours a week, laboratory three hours a week.

### Industrial Design 85.212★

#### Mass Production Technology for Industrial Design B

Continuation of Industrial Design 85.211★. Transformation techniques applied to manufacturing materials. Part-design requirements and cost factors for manufacturing processes. The influences and role of assembly, finishing, production tooling, costing are addressed.

Precludes additional credit for Industrial Design 85.210.

Prerequisite: Industrial Design 85.211★ or permission of the School.

Lecture and tutorials three hours a week, laboratory three hours a week.

### Industrial Design 85.215★

#### Computer Applications for Industrial Design

Provides industrial design students with a working knowledge of computers and their applications. Topics covered include computer fundamentals and the use of application packages in design. Sample applications may include text/word processors, graphics manipulation, authoring software, computer-aided design and 3-D modellers.

Precludes additional credit for Computer Science 95.104★.

Prerequisite: Industrial Design 85.131★.

Lecture and tutorials three hours a week.

### Industrial Design 85.216★

#### Introduction to Multimedia

Analogue and digital systems and graphic processes used in the making of images. Fundamentals of still photography and videography combined with current computer technologies in the application of visual communication techniques.

Lectures three hours a week, laboratory three hours a week.

### Industrial Design 85.231

#### Projects IIA

Introduction to the basic principles of design, incorporating fundamental aspects of design methodology. Topics include: typology of objects, colour specification, techniques for modelling, visual communication, problem-solving and relevant form and colour applications. The design project(s) will relate to principles covered in the lectures.

Prerequisites: Industrial Design 85.101★ and 85.131★; or permission of the School.

Lectures four hours a week, studio eight hours a week.

### Industrial Design 85.232★

#### Projects IIB

Introduction to the design principles associated with adapting products to an existing product semantic. Topics covered: principles of design, product semantics, design analysis, design synthesis, design evaluation, and modelling techniques. The design project(s) explore some or all of the design principles covered in the lectures.

Prerequisite: Industrial Design 85.231; or permission of the School.

Lectures two hours a week, studio four hours a week.

### Industrial Design 85.260★

#### Ergonomics for Industrial Design

This course focuses on physical, biomechanical, environmental and cognitive issues. Displays, controls, workstations, tools and software interfaces are examined from scientific and practical perspectives.

Precludes additional credit for Industrial Design 85.360★.

Prerequisite: Psychology 49.100.

Lectures and discussion three hours a week.

### Industrial Design 85.312★

#### Graphics Technology and Design

Techniques and processes used in printing and the relationship of these processes to graphic design. Typeface design and the development of type. Typefaces as exponents of cultural trends. Basic underlying typography and layout in graphic design. Minor graphic design projects.

Prerequisites: Industrial Design 85.231 and 85.232★.

Lectures and tutorials three hours a week.

### Industrial Design 85.313★

#### Package Engineering and Design

Processes and materials used in the packaging industry. Principles of package engineering and design for the transportation and distribution of mass-produced products. Product and brand identification; corporate identity through package design. Minor packaging design projects.

Prerequisites: Third-year registration and Industrial Design 85.312★.

Lecture and tutorials three hours a week.



**Industrial Design 85.314 ★****Exhibition Design**

The field of exhibition design is explored through lectures and case studies. Students undertake a preliminary exercise in display and exhibition design prior to the development and implementation of an exhibition; this normally involves the design of the School of Industrial Design's Annual Graduation Exhibition.

Prerequisite: Industrial Design 85.231.

Lectures and tutorials three hours a week.

**Industrial Design 85.321 ★****Product Communication and Evolution**

The mechanics of communication in general and of communication by means of objects in particular. Analyses of objects and environments with respect to communicative functions.

Prerequisite: Third-year registration or permission of the School.

Lecture and tutorials three hours a week.

**Industrial Design 85.322 ★****Advanced Studies In Form and Colour**

Students may continue the research and study encountered in Industrial Design 85.231 and 85.232 ★ by doing advanced research in some specific area of the phenomena of form and/or colour. Directed study.

Prerequisites: Industrial Design 85.231 and 85.232 ★ or permission of the School.

Lecture and tutorials three hours a week.

**Industrial Design 85.330****Projects IIIA**

This course is an introduction to the design principles associated with the evaluation and re-design of an existing product. Topics to be covered include: user/machine relationship, component packaging, and manufacturability. The design project(s) explore some or all of the design principles covered in the lectures.

Prerequisite: Industrial Design 85.232 ★ or permission of the School.

Lectures four hours a week, studio eight hours a week.

**Industrial Design 85.331****Projects IIIB**

This course is an introduction to the principles of innovation as found in industrial design. Topics to be covered include: invention, innovation, entrepreneurship, basic mechanisms. The design project(s) explore some or all of the design principles covered in the lectures.

Prerequisite: Industrial Design 85.330 or permission of the School.

Lectures four hours a week, studio eight hours a week.

**Industrial Design 85.335 ★ and 85.336 ★****Third-Year Special Industrial Design Studies**

Special Industrial Design Studies deal with specific projects, which may differ from year to year depending on the availability of specialists in a particular field or study opportunities as they present themselves.

Prerequisite: Third- or Fourth-year registration, or permission of the School.

Lectures, tutorials and laboratory six hours a week.

**Industrial Design 85.351 ★****Fine Arts and Design**

Cultural subjects from the fields of fine and performing arts. The context and relevance of industrial design as an integral part of our culture. Guest lecturers.

Precludes additional credit for Industrial Design 85.350.

Prerequisite: Industrial Design 85.100 ★ (Architecture 76.206 ★).

Lectures and tutorials three hours a week.

**Industrial Design 85.352 ★****Contextual Nature of Products**

Cultural subjects which have an influence on contemporary industrial design. The perspective of the course is anthropological: the context and cultural relevance of industrial design.

Precludes additional credit for Industrial Design 85.350.

Prerequisite: Industrial Design 85.100 ★ (Architecture 76.206 ★).

Lectures and tutorials three hours a week.

**Industrial Design 85.361 ★****Industrial Design and the User**

Design methodology and the value of scientific methods for data collection and decision making. Techniques such as interviewing, focus groups, usability testing, brainstorming, and value analysis will be covered. Teamwork techniques and values are considered.

Prerequisite: Industrial Design 85.260 ★ (Architecture 76.206 ★).

Lectures three hours a week, laboratory three hours a week.

**Industrial Design 85.400 ★****Professional Practice In Industrial Design**

The organizational aspects of consultancies and client responsibilities within the framework of corporate management. Topics include: the form of contracts for consultancy, determination of fees, legal implications, patents and copyrights. Guest lecturers.

Prerequisite: Industrial Design 85.100 ★ (Architecture 76.206 ★).

Lectures and discussion three hours a week.

**Industrial Design 85.401 ★****Industrial Design Seminar**

Each year a special topic is chosen to be elaborated on and discussed. The topics deal with problems in the relationship of industrial design to other disciplines or problems regarding the theoretical aspects of industrial design itself.

Prerequisite: Registration in Fourth-year Industrial Design projects.

Seminar three hours a week.

**Industrial Design 85.411 ★****Advanced Studies In Manufacturing Technology for Industrial Design**

Directed study in the field of manufacturing, centred on such topics as: cost analysis, new materials and processes, computer aided manufacturing, numerically controlled machining, machining of moulds, etc.

Prerequisites: Industrial Design 85.211 ★ and 85.212 ★.

**Industrial Design 85.420 ★****Form Organization**

Using form organization as a tool to design, the definition and prescription of monolithic solids by means of an abstract system; making and verifying materialized approximations of such solids.

Prerequisites: Industrial Design 85.231 and 85.232 ★ or permission of the School.

Lectures, tutorials and laboratory six hours a week.

**Industrial Design 85.430 (2.0 credits)****Major Project**

Application of design principles in a comprehensive design project. Problem area chosen should be product oriented and of sufficient complexity. Normally undertaken in consultation with off-campus organizations and industry; supervised by faculty members.

Prerequisite: Industrial Design 85.331 or permission of the School.

Lectures and tutorials two hours a week, studio ten hours a week.

**Industrial Design 85.431 ★****Minor Projects A**

Enables students to demonstrate through a series of short projects their versatility in product design or in complementary design fields such as communication, graphic design or design experiments. Emphasis is on time management and the ability to work independently on assigned projects.

Precludes additional credit for Industrial Design 85.431.

Prerequisite: Industrial Design 85.331 or permission of the School.

Lectures and tutorials two hours a week, studio four hours a week.

**Industrial Design 85.432 ★****Minor Projects B**

The application of required skills and team work in a comprehensive design project. The subject matter deals with broad issues in design.

Precludes additional credit for Industrial Design 85.432.

Prerequisite: Industrial Design 85.331 or permission of the School.

Lectures and tutorials two hours a week, studio four hours a week.



**Industrial Design 85.435★ and 85.436★**

**Fourth-Year Special Industrial Design Studies**

Like the Third-year Special Industrial Design Studies, those of Fourth year deal with specific projects, which may differ each year depending on the availability of specialists among the faculty of the School of Industrial Design or on particular opportunities as they present themselves.

Prerequisite: Fourth-year registration or permission of the School.  
Lectures and tutorials two hours a week, studio four hours a week.

**Industrial Design 85.440★**

**Industrial Practice Internship Field Reports**

The relationship of technological phenomena to industrial design. Following the internship period (12 weeks), a comprehensive report describing observations and insights must be submitted. Laboratory three hours a week.

# Integrated Science Studies (Science)

## Academic Administration

**Chair,** I. Munro

**Members of the Committee,** J. Kelly • B.R. Lifeso • I. Munro  
• S. Peck • I. Pressman • I. Reichstein • W. Romo • R. Wightman

## General Information

The Integrated Science Studies (ISS) program offers undergraduate students in the Faculty of Science the opportunity to develop an individualized program that blends a concentration in Science with a linked area of specialization in another faculty. A student whose academic aspirations cannot be satisfied within the constraints of one of the many programs offered by the Faculty of Science may apply to the Integrated Science Studies program and describe the program that he or she would choose to pursue. If the proposal is intellectually coherent and satisfies the academic constraints of the Integrated Science Studies Program, the student will be admitted to ISS and will be permitted to follow the program that has been approved.

The program requires that a student select an area of concentration within Science: physical sciences, environmental sciences, life sciences, behavioral sciences, or mathematics and statistics, in order to acquire a depth of understanding of the particular discipline, its workings and its significance. In the associated specialty area outside of the Faculty of Science, a pattern of courses should be selected that provides the student with a concomitant, integrated understanding. Students are urged to be creative and bold in their planning, but should consult with a member of the ISS Committee for advice or assistance before applying for admission to the Integrated Science Studies program. A detailed list of the proposed courses and a description of the overall program must be submitted by every ISS applicant beyond First year. First-year students must submit their planned program to the ISS Committee before they commence their Second year. The Committee monitors the progress of all ISS students.

An Honours program and a Major program are available for ISS students. Both require a course of Independent Study as an important part of the program (Integrated Science 60.498, 60.399★).

This program is suitable for part-time students and mature students. Students in ISS may be eligible to transfer into co-op or work-study programs sponsored by other Departments in the Faculty of Science, provided they meet all the prerequisites and grade requirements. ISS students are advised to familiarize themselves with the particular rules of the Faculty of Science that apply to them.

Many different specific program combinations have been adopted in the past. Possible combinations available within the program are included here for illustrative purposes, but the following does not constitute an exhaustive list:

- biology and psychology, e.g. neuroscience, nutrition plus behaviour;
- biotechnology and business, e.g. genetic engineering and management;
- chemistry/biochemistry and business, e.g. pre-pharmacy;
- ecology and management, e.g. resource management, conservation;

- environmental sciences (i.e. biology, chemistry, geography, earth sciences, physics, statistics), e.g. pollution, acid rain, climate studies, sustainable development;
- geography, sciences and anthropology, e.g. archeological sciences;
- life sciences (biology, chemistry, biochemistry) and social sciences, e.g. pre-medical studies, pre-dentistry;
- operations research/mathematics and business, e.g. management science;
- physical geography and civil engineering, e.g. soil sciences;
- physics and psychology, e.g. perception;
- physics and geography and computer science, e.g. remote sensing;
- psychology and computer science, e.g. artificial intelligence, user interfaces;
- science and engineering, e.g. bioengineering, instrumentation, ergonomics;
- science and journalism, e.g. science writing, editing, reporting;
- science and foreign languages/linguistics, e.g. translation, interpreting;
- statistics and economics and business and law, e.g. actuarial sciences.

## Admission Requirements

Application for admission to the program is made on an application form available from the Office of Registrarial Services. The admission requirements for these programs are those specified for the B.Sc. Honours and Major degrees. (See p. 116.) Before seeking formal admission to the program, students are advised to consult with the Chair for assistance in formulating an application proposal and a coherent set of courses that will meet the objectives of the student and fulfil Calendar requirements.

## Course Requirements

### First Year

The First-year program consists of 5.0 credits approved for a First-year Science program including:

- (a) Mathematics 69.107★ and 69.117★;
- (b) 2.0 experimental Science credits chosen from two of Biology, Chemistry, Geology, Physics;
- (c) 2.0 additional credits chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except Computer Science 95.100★ or 95.101★) or Engineering.

In establishing their First-year program, students should consult with the Chair of the Integrated Science Studies program or a member of the committee to ensure that they register for appropriate courses.



## Honours Program

The program, under the direction of the Integrated Science Studies Committee, consists of 20.0 credits, 15.0 beyond First year including:

1. 9.0 credits selected from the Faculty of Science above the 100-level, including Integrated Science 60.498; 4.0 of the Science credits must be at the 300- or 400-level; the foregoing courses are designated as the Science sequence;
2. 4.0 credits in an inter-related specialized area selected from outside the Faculty of Science; these credits are designated as the Non-Science sequence.

At least 2.0 credits must also be chosen from the Faculties of Arts or Social Sciences.

At least 13.0 credits must be at the 200- or higher level. In this program, all Technology, Society, Environment Studies courses are considered Non-Science credits.

## Major Program

Although programs are planned and approved on an individual basis, the general framework of regulations is specified. The program, under the direction of the Integrated Science Studies Committee, consists of 15.0 credits, 10.0 beyond First year including:

1. 6.0 credits selected from the Faculty of Science above the 100-level, including Integrated Science 60.399★; 2.0 of the Science credits must be at the 300- or 400-level; the foregoing credits are designated as the Science sequence;
2. 3.0 credits in an inter-related specialized area selected from outside the Faculty of Science; these credits are designated as the non-Science sequence.

At least 2.0 credits must also be chosen from the Faculties of Arts or Social Sciences.

At least 8.0 credits must also be at the 200-level or higher. In this program, all Technology, Society, Environment Studies courses are considered Non-Science credits.

## Graduation

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 117), in addition to the Committee regulations and requirements.

## Honours Program

To qualify for graduation a student must satisfy the normal requirements of the Faculty and have GPAs of 6.5 or better in both the Science sequence (9.0 credits) and the Non-Science sequence (4.0 credits) as well as an overall GPA of 5.0 or better (20.0 credits). The class of Honours degree will be determined following general Faculty regulations (p. 120) using all 13.0 credits in the

Science and Non-Science sequences to calculate the Honours GPA.

## Major Program

To qualify for graduation a student must satisfy the normal requirements of the Faculty and have GPAs of 4.0 or better in the Science sequence (6.0 credits), the Non-Science sequence (3.0 credits), and overall (15.0 credits). The last 5.0 credits taken normally will include at least 1.0 credit from each of the Science and Non-Science sequences.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

### Integrated Science 60.399★

#### Independent Study

The student must have the agreement of a member of the University faculty to supervise the project. The student is responsible for filing an outline of the proposed project (which includes an indication of the methods to be used, and which has been written in consultation with the adviser), with the Integrated Science Studies Chair no later than three weeks after registration in the course. A final report must be prepared and submitted in two copies, one to the project adviser and one to the Chair of the Committee, by the last day of classes of the term in which the student is registered. This course is normally open only to Integrated Science Studies students. Students must demonstrate the integrative or interdisciplinary nature of their proposed study. Prerequisite: At least 0.5 credit at the 300-level or better and permission of the Committee.

### Integrated Science 60.498

#### Honours Project

A project is carried out by the student in consultation with a faculty adviser. The project must be approved by the adviser's department and by the Chair of the Integrated Science Studies program. A written outline of the proposed study, approved by the adviser, must be submitted to the Chair of the Committee no later than three weeks after registration in the course. A progress report must be submitted to the adviser and the Chair by the first day of classes in the Winter term. Three copies of the final written report shall be prepared and submitted by the last day of Winter term classes, one each for the project adviser, an Integrated Science Studies Committee member, and a third reader, who has some familiarity with the project area. An oral report normally will be required at the conclusion of the project. The project is the equivalent of one credit, with an average of eight hours of work per week. An "In Progress" grade will not be given for work not meeting the deadlines except in unusual circumstances and with the approval of the Committee Chair. The fulfilment of these requirements is the responsibility of the student.

# Interdisciplinary Studies

## (Arts and Social Sciences)

2216 Dunton Tower  
Telephone: 520-2368  
Fax: 520-3985

### Academic Administration

**Director,** J. A. Brook  
**Associate Director,** Charles Gordon

**Program Co-ordinators,** *Child Studies*, Tina Daniels • *Cognitive Science*, Ann Laubstein • *Directed Interdisciplinary Studies*, Charles Gordon

### Programs of Study

The Institute of Interdisciplinary Studies is the administrative centre for interdisciplinary programs in the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management that do not have another home. The Institute offers B.A. (Honours) and B.A. programs in Child Studies (see p. 189), and Directed Interdisciplinary Studies (see p. 213), and an Honours program in Cognitive Science (see p. 178).

The degree of Bachelor of Arts in Interdisciplinary Studies is pursued by means of a plan of study proposed by the student. Lists of courses from which proposals may be drawn are provided in the following areas: Aboriginal Studies, African Studies, Asian Studies, Labour Studies, Latin American and Caribbean Studies, Medieval Studies, United States Studies and Urban Studies. (For Visual and Performing Arts, see the listings for the School for Studies in Art and Culture, p. 139, for Technology, Society, Environment Studies, see p. 431). The student may propose a plan of study in an area of special interest to them that they define themselves.

In addition, the Institute offers three kinds of interdisciplinary courses: Humanities (course prefix 02), Social Science (course prefix 03) and combined Humanities/Social Science (course prefix 04). These courses are listed on p. 297.

### Interdisciplinary Courses

The subject areas and specific courses listed here include:

- (a) courses supervised and/or administered by the Institute for Interdisciplinary Studies;
- (b) courses supervised and/or administered by one of the four undergraduate faculties, but which are available as important areas of concentration to students registered in programs offered by other faculties;
- (c) courses offered by members of more than one discipline or faculty available to all students (subject to restrictions outlined within the course descriptions themselves and the regulations of the faculty in which the student is registered);

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

#### Arts

##### Arts 02.150

##### Arts Seminar

An intensive introduction to close analytical reading, reasoned writing, and the study of text in context. The background for the seminar will be provided by the lectures for Philosophy 32.150D. Readings, somewhat more complex than those in Philosophy 32.150D, follow the same sequence of topics discussed in that

course. However, students in Arts 02.150 will be asked to take on further assignments including a major research project in second term.

Open only to First-year students who are also registered in Philosophy 32.150D.

Prerequisite: Permission of the Department of Philosophy is required.

Seminar three hours a week.

#### Arts and Social Sciences

##### Cognitive Science 07.201 ★

##### History of Cognitive Science

A survey of the history and development of cognitive science as a separate branch of knowledge, from its roots in cybernetics and theory of computation in the late 1940's to the large multi-disciplinary, multi-national teaching and research program it has now become.

Prerequisite: Second-year standing or permission of the Institute. Three hours a week.

##### Interdisciplinary 04.251 ★

##### Issues in Child Studies

This course takes an interdisciplinary approach to Child Studies, introducing students to the perspectives and methods of study employed by various disciplines, including psychology and sociology. Issues related to research ethics will be introduced.

Prerequisite: Psychology 49.100 and permission of the Institute. Lecture and discussion groups, three hours a week.

##### Cognitive Science 07.301

##### Elements of Cognitive Science

Selected topics in cognitive science covered from the perspectives of psychology, computer science, linguistics, philosophy and other related disciplines.

Precludes additional credit for Cognitive Science 07.101 ★. Lectures three hours a week.

##### Arts and Social Sciences 04.390

##### The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature. (Also listed as English 18.390.) All assigned readings will be in English.

Prerequisite: Third-year standing.

##### Interdisciplinary 04.391 ★

##### Themes in Interdisciplinary Inquiry

The course will examine topics chosen by the interdisciplinary faculty, along with various methods of inquiry and styles of thought that may be brought to bear upon them. Student reading and research will compare, contrast and synthesize various perspectives.



Prerequisite: Third-year standing in Directed Interdisciplinary Studies, or permission of the Institute.  
Seminar three hours a week.

Interdisciplinary 04.441 ★

#### **A Seminar in United States Studies**

A required course for students in United States Studies area in Directed Interdisciplinary Studies designed to allow discussion and research on topics of an interdisciplinary nature.

Interdisciplinary 04.498

#### **Honours Project**

Interdisciplinary research project for Honours students in the fourth year of all IIS programs. In selecting a project, students must consult their Program Coordinator. Only the Program Coordinator can assign a supervisor or grant approval to register in this course. Arts and Social Sciences regulations governing Honours Research Essays and Honours Theses apply.

Registration in this course is limited to students eligible for Fourth-year standing in the B.A. Honours program in IIS.

### **Science**

(for further information contact the office of the Dean of Science, 520-4388)

Science 60.101 ★

#### **Introduction to the Environment**

The nature of the biosphere: scientific bases of important environmental issues; evolution of life; properties and dynamics of populations and ecosystems; biodiversity; introduction to identification skills; sustainability of renewable resources, including food.

Not acceptable for credit in a Science program.

Precludes additional credit for Science 60.100.

Prerequisite: A knowledge of Grade 10 advanced level Mathematics will be assumed.

Lectures/demonstrations three hours a week and project assignments.

Science 60.102 ★

#### **The Laws of Nature**

Fundamental ideas and concepts of science; origins and expressions of these in the ecosphere; types of forces; radiation; energy transfers and transitions; properties of atoms and molecules; chemistry in the environment.

Not acceptable for credit in a Science program.

Precludes additional credit for Science 60.100.

Prerequisite: Science 60.101 ★ or permission.

Lecture/demonstrations three hours and project assignments.

Science 60.201 ★

#### **The Earth**

Early earth history; tectonic cycles; mineral resources of the earth's surface; the oceans; biogeochemical cycles; natural hazards.

Not acceptable for credit in a Science program.

Precludes additional credit for Science 60.200.

Prerequisite: Science 60.102 ★ or equivalent.

Lectures/demonstrations three hours a week and project assignments.

Science 60.202 ★

#### **Human Impacts on the Environment**

Air and water pollution; global climatic change; waste management; industrial chemicals; sources and uses of energy; nuclear energy and radiation; risk assessment of technological hazards.

Acceptable only as a free elective in a Science program.

Precludes additional credit for Science 60.200.

Prerequisite: Science 60.201 ★ or two experimental science OACs or one First year university experimental science course.

Lectures/demonstrations three hours a week and project assignments.

### **Social Sciences**

First Year Seminar in Human Rights 01.114

#### **Human Rights: Issues and Investigations**

See course description on p. 85.

First Year Seminar in Interdisciplinary Studies 01.115

#### **Reading the Web**

See course description on p. 85.

First Year Seminar in Social Sciences 01.144

#### **Introduction to Social Sciences**

See course description on p. 87.

Social Sciences 03.101

#### **Human Rights and the Social Sciences**

Human rights from an interdisciplinary perspective. Topics include the foundations and nature of rights; roots of inequality and oppression; aboriginal rights; racism; women and rights; sexual orientation; state and corporate power; economic exploitation; the environment and rights; warfare; torture; and social movements.

Lectures three hours a week.

Social Sciences 03.300 ★

#### **Computer Applications in the Social Sciences**

An introduction to the use of mainframe and micro-computer applications in social science research. Topics covered may include statistical packages, database management, word processing, graphics, computer communications, spread sheets, computer data collection and laboratory control.

Prerequisites: Computer Science 95.101 ★, or any programming course, and a research-methods course.

Social Sciences 03.401 ★

#### **Innovations in Social-Science Data Collection and Measurement**

This course provides an opportunity to study recent innovations in social-science data collection and measurement. It is an interdisciplinary course of interest to senior students, researchers and practitioners who already have a preliminary foundation in social science methods. Topics emphasized vary from year to year, but developments in sampling theory, survey instrument design, and reduction of measurement bias are examples of intended topics.

Prerequisite: One full credit in methodology in one of the social sciences, or permission of the program co-ordinator.

Social Sciences 03.402 ★

#### **Innovations in Quantitative Analysis for the Social Sciences**

This course provides an opportunity to study recent innovations in quantitative analysis of social science data. It is an interdisciplinary course of interest to senior students, researchers and practitioners who already have a preliminary foundation in quantitative analysis for the social sciences. Topics emphasized vary from year to year, but linear restriction modelling, log-linear techniques and developments in time series analysis are examples of intended topics.

Prerequisite: One full credit in methodology in one of the social sciences, or permission of the program co-ordinator.

Social Sciences 03.410 ★

#### **Seminar on Special Research Problems in Social Sciences**

This is a research-oriented honours seminar that focuses on special problems in the Social Sciences.

Prerequisite: Fourth-year honours in a social sciences discipline or permission of the program co-ordinator.

# School of Languages, Literatures and Comparative Literary Studies

## Italian

### (Arts and Social Sciences)

1416 Dunton Tower  
Telephone: 520-5644

#### General Information

Students currently enrolled in programs offered by the Discipline of Italian are governed by the requirements contained in the 1997-98 *Undergraduate Calendar*.

#### Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

#### Italian Language Acquisition Courses

Students must read and follow the *Guidelines for Choosing Italian Language Courses*, included in the *Registration Instructions and Class Schedule* booklet.

Before selecting a language acquisition course, students should note that there are three levels in language courses and the following sequence applies:

- Level 1** Italian 26.100, 26.110 or 26.170  
26.180 (2.0 credits)  
**Level 2** Italian 26.200 26.210  
**Level 3** Italian 26.300

Students cannot go backwards in the sequence of level.

#### University of Ottawa-Carleton University Collaboration

The language acquisition courses Italian 26.100, 26.170, 26.200 and 26.300 are offered each year at both Carleton and the University of Ottawa. The other courses alternate each year between the two universities.

University of Ottawa course numbers corresponding to Carleton numbers are listed in parentheses.

Italian 26.100 (1911/1912)

##### Introductory Italian

A course designed to introduce the student to the acquisition of Italian. Understanding, speaking, reading and writing.  
Precludes additional credit for Italian 26.110, 26.170, 26.180, and 26.101★/26.102★.  
Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.110

##### Intensive Italian I

Intensive course designed to accelerate the acquisition of Italian. Intended for students with no previous knowledge of Italian who wish to obtain in one term the linguistic competence usually acquired in one year.  
Precludes additional credit for Italian 26.180.  
Lectures six hours a week.

Italian 26.150

##### The Italian Tradition in Literature

Selected readings (in translation) of some of the major figures of Italian literature as Dante, Boccaccio, Petrarca, Machiavelli, Goldoni, Leopardi, Manzoni, Verga, D'Annunzio, Pirandello, Svevo, Moravia, Pasolini, Calvino, Fo. Cannot be counted towards a B.A. (Honours) or B.A. degree in Italian Studies.  
Lectures three hours a week.

Italian 26.160 (2105/2106; F2505/2506)

##### Introduction to Italian Culture

Major phases of Italian social and intellectual history. Literary as well as non-literary texts will be read in translation. Cannot be counted towards a B.A. (Honours) or B.A. degree in Italian Studies.

Language of instruction: English.

Precludes additional credit for Italian 26.260.

Lectures three hours a week.

Italian 26.170

##### Italian for Italophones

Designed to meet the needs of students of Italian origin and/or speakers of a community language or a dialect, wishing to retrieve standard Italian or to add standard Italian to their linguistic repertoire.

Precludes additional credit for Italian 26.100, 26.101★, 26.102★, 26.110, and 26.180.

Prerequisite: Some knowledge of an Italian dialect or of a community language.

Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.200 (2911/2912)

##### Intermediate Italian

A sequel to Introductory Italian. Speaking, reading, writing, understanding, and using the language as a means for self-expression. A course intended to lead to the comprehension and enjoyment of Italian texts.

Precludes additional credit for Italian 26.180.

Prerequisites: Italian 26.100 or 26.170 and 26.101★ and 26.102★ or permission of the School.

Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.210

##### Intensive Italian II

Intended for students who wish to take the sequel to Italian 26.110. It provides students with the linguistic competence usually acquired in the second year.

Precludes additional credit for Italian 26.180.

Prerequisites: Italian 26.100 or 26.110.

Lectures six hours a week.

Italian 26.250 (2927/2928)

##### Introduction to the Study of Italian Literature

Discussion of basic concepts of literary criticism in relation to representative texts from Italian literature. This course must be taken by students that plan to major in Italian Studies.



Precludes additional credit for Italian 26.240.

Prerequisite: Italian 26.180, 26.200 or 26.210; or permission of the School.

Lectures three hours a week.

Italian 26.262 (2129/2130; F2529/2530)

**The Italian Heritage in North America**

Survey of the Italian-Canadian and Italian-American contribution to Canadian and American culture. Texts will be read in English. The Language of instruction is English at Carleton and English or French at the University of Ottawa. This course may be counted towards a degree in Italian Studies.

Precludes additional credit for Italian 26.362.

Prerequisites: Students enrolled in a B.A. (Honours) or B.A. Program must have completed either Italian 26.200 or 26.180.

Lectures three hours a week.

Italian 26.300 (3911/3912)

**Advanced Italian**

A sequel to Intermediate Italian. Defined points of grammar, style, composition; conversation and translation. Designed to perfect the command of Italian.

Prerequisite: Italian 26.180, 26.200 or 26.210; or permission of the School.

Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.351 ★

**Italian Literature: Periods and Movements (1250-1650)**

Focus on the formation of literary periods, the development of movements and other normative aspects of literary history.

Precludes additional credit for Italian 26.350.

Prerequisite: Italian 26.250.

Lectures three hours a week.

Italian 26.353 ★

**Italian Literature: Periods and Movements (1650-1990)**

Focus on canon formation, the development of movements and other normative aspects of literary history.

Precludes additional credit for Italian 26.352.

Prerequisite: Italian 26.250.

Lectures three hours a week.

Italian 26.356 ★

**Themes in Italian Literature I (1250-1650)**

Specific themes and issues pertaining to a particular period, genre or movement. The topic for 1998-99 is: La figura della donna dal Duecento al Cinquecento.

Precludes additional credit for Italian 26.354.

Prerequisite: Italian 26.250.

Lectures three hours a week.

Italian 26.357 ★

**Themes in Italian Literature II (1650-1990)**

Specific themes and issues pertaining to a particular period, genre or movement.

Precludes additional credit for Italian 26.354.

Prerequisite: Italian 26.250.

Lectures three hours a week.

Italian 26.360 (3958/3959)

**Themes and Issues in Italian Culture**

Designed for students wishing to complete a degree in Italian Studies. The course examines issues concerning the development of Italian culture from the Thirteenth century to the Twentieth century. Topics may vary from year to year. The topic for 1998-99 is: Istanze utopiche nella cultura Italiana dal Duecento ad oggi.

Prerequisites: Italian 26.180, 26.200 or 26.210; or permission of the School.

Lectures three hours a week.

Italian 26.401 ★

**The History of the Italian Language from 1860 to the Present**

Issues pertaining to the development of the Italian language from 1860 to the present.

Precludes additional credit for Italian 26.400.

Prerequisite: Italian 26.300 or permission of the School.

Lectures three hours a week.

Italian 26.402 ★

**Translation**

The general principles as well as the particular problems of translation from and into Italian.

Precludes additional credit for Italian 26.480.

Prerequisite: Italian 26.300 or permission of the School.

Lectures three hours a week.

Italian 26.450 (4905/4906)

**Italian Literature: Special Topics**

A study of an Italian author, movement or theme.

Prerequisite: A 300-level literature course or permission of the School.

Lectures three hours a week.

Italian 26.460 (4903/4904)

**Italian Culture: Interdisciplinary Perspectives**

This course will study periods or aspects of Italian culture from the point of view of the relation between literature and the other arts or disciplines.

Prerequisite: Italian 26.360 or permission of the School.

Lectures three hours a week.

Italian 26.470

**Topics in Italian Studies**

Students of Italian wishing to focus on a particular aspect of Italian culture, language or literature. The topic for 1998-99 is: Letteratura e cinema in Italia.

Prerequisites: Italian 26.250, 26.300 and 26.360.

Seminar three hours a week.

Italian 26.490 (4929/4930)

**Directed Studies**

Open to students enrolled in an Honours program in Italian Studies. Individual tutorial on a selected topic chosen by the student in consultation with the Italian Section.

Prerequisite: GPA of 9.0 or better in Italian and permission of the School.

# Journalism and Communication

## (Public Affairs and Management)

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346 St. Patrick's Building  
Telephone: 520-7404  
Fax: 520-6690

### Academic Administration

**Director,** Christopher Dornan

**Associate Director (Mass Communication),** Paul Attallah

**Supervisor of Graduate Studies, Journalism,**  
Christopher Dornan

**Supervisor of Undergraduate Studies, Journalism,**  
Klaus Pohle

### Teaching Staff

#### Professors

**G. Stuart Adam, B.J., M.A. (Carleton), Ph.D. (Queen's) • Michèle Martin, B.A. (Laval, UQAM), M.A. (Montréal), Ph.D. (Toronto) • Vincent Mosco, B.A. (Georgetown), Ph.D. (Harvard)**

#### Associate Professors

**Elly Alboim, B.A. (McGill), M.Sc. (Columbia) • Paul Attallah, B.A. (Ottawa), M.A., Ph.D. (McGill) • Roger Bird, B.A. (Carleton), M.A., Ph.D. (Minnesota) • Michael Dorland, B.A., M.A. (McGill), Ph.D. (Concordia) • Christopher T. Dornan, B.J. (Carleton), M.A. (Cambridge), Ph.D. (McGill) • Ross A. Eaman, B.A. (Carleton), M.A. (Toronto), Ph.D. (Queen's) • Jan George Frajkor, B.A. (Sir George Williams) • Barbara Freeman, B.J., M.A. (Carleton), Ph.D. (Concordia) • Alan Frizzell, B.A. (Strathclyde), M.A. (Queen's) • Peter Johansen, B.A. (Carleton), M.A. (Stanford) • Lionel Lumb • Patrick MacFadden, B.A. (McGill), M.A. (Columbia) • Mary McGuire, B.J. (Carleton) • Catherine McKercher, B.A. (Carleton), M.J. (Temple) • Klaus Pohle, M.J. (Carleton) • Daniel B. Pottier, B.J., M.A. (Carleton) • Robert Rupert, M.A. (Maryland) • Eileen M. Saunders, B.A. (St. Francis Xavier), M.A. (Queen's), Ph.D. (Carleton)**

#### Assistant Professors

**David Tait, B.J., M.J. (Carleton) • Dwayne Winseck, B.A., M.A. (Windsor), Ph.D. (Oregon)**

#### Adjunct Research Professors

**A.J. Cordell • C. Sanger • J. Sawatsky**

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### General Information

#### Honours Program in Journalism

The School of Journalism and Communication offers three undergraduate degree programs in Journalism. These are the: *Bachelor of Journalism with Honours*, *Bachelor of Journalism (Combined Honours)* and *Bachelor of Arts (Combined Honours)*. All three programs are designed to provide a thorough education in journalism based on three components: professional courses designed to instill and assess the skills of journalism; academic courses to guide inquiry into the nature and conduct of the news media; and University education in disciplines outside the School.

Students will be trained in the skills of gathering, assessing and presenting information in various media. They will also be educated so as to be able to make informed and considered judgments, both about news media practices and about the subject on which they bring their journalistic attentions to bear. Advantage is taken of the many resources outside the University provided by Carleton's location in the national capital.

Students who already hold an undergraduate degree in another field are not eligible to apply for the B.J. (Hons.) program. These students should consult the information on the Master of Journalism or the Master of Arts in Communication in the *Faculty of Graduate Studies and Research Calendar*.

#### Bachelor of Arts in Mass Communication

The School of Journalism and Communication offers B.A. (Honours) and B.A. undergraduate programs in Mass Communication. (See p. 326.)

#### Graduate Programs

The School of Journalism and Communication offers the Master of Journalism degree, a Master of Arts in Communication and a Ph.D. in Communication. For further details consult the *Faculty of Graduate Studies and Research Calendar*.

### Program Requirements in Journalism

#### Program Requirements, Bachelor of Journalism with Honours

Candidates admitted to First Year of the B.J. program in 1995-96 or later take a total of 20.0 credits, normally in this sequence:

*First Year*

Journalism 28.100;

4.0 approved optional credits



**Second Year**

Journalism 28.221, 28.225★, 28.251★  
3.0 approved optional credits

**Third Year**

Journalism 28.325, 28.326  
3.0 approved optional credits

**Fourth Year**

28.400; 28.421; two of 28.425★, 28.426★, 28.427★ and 28.428★.  
2.0 approved optional credits

**Note:** No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously. No course may be taken more than once.

Prior to graduation, as part of their optional courses, students must complete a French language credit. Acceptable 100-level French courses are any of 20.107, 01.108, 01.117, 20.145, and 20.160. Those who already have capacity in French may fulfill this requirement by passing a language test administered on an *ad hoc* basis by the Department of French, but will be required to take an approved optional credit. Students who have completed French Immersion in High School, or who have obtained a Bilingual Diploma or Certificate will be regarded as having met this French language requirement, but will be required to take an approved optional credit. Students from abroad whose mother tongue is other than English, or students whose research interests require another language, may obtain permission from the Supervisor of Undergraduate Studies to substitute this language for French.

In addition, before graduation students must take 1.0 approved credit in Canadian history, normally History 24.130, 24.233, 24.234 or 24.235. Students who expect to practice journalism in another country may be advised to choose a different history course and must seek written permission to do so from the Supervisor of Undergraduate Studies (Journalism).

Finally, students should be aware of the School's requirement that, before graduation, 5.0 credits must be taken in a field other than Journalism, with at least 1.0 of these credits at the 300-level or higher.

### **Program Requirements, Bachelor of Journalism (Combined Honours)**

Honours programs may be taken by students in the four-year undergraduate program in which Journalism is combined with other disciplines. Such programs are available with the following subjects: Economics, English, French, History, Mass Communication, Political Science, Law, Philosophy, Sociology and Women's Studies. Details of the specific requirements for those programs may be obtained from the Department concerned. Special arrangements may be made for other combinations in consultation with the Supervisor of Undergraduate Studies (Journalism). The Journalism requirements for the Combined Honours program are normally the same as those for the Bachelor of Journalism with Honours listed above. With the exception of Philosophy (see below), the requirements of the other discipline are the same as those listed for the Combined Honours program in that discipline. Students are advised to consult the Combined Honours entry of their second discipline in this calendar for details. Combined Honours programs in Journalism and other disciplines are available only to students registered in Journalism.

### **Program Requirements, Bachelor of Arts (Combined Honours)**

Upon application procedures described below, students combining Journalism with another discipline may elect to graduate with the degree Bachelor of Arts (Combined Honours) in lieu of the Bachelor of Journalism (Combined Honours). The Journalism requirements for this degree are the same as those for the Bachelor of Journalism with Honours listed above. With the exception of Philosophy (see below), the requirements of the other discipline are the same as those listed for Combined Honours programs in

the other discipline. Students are advised to consult the Combined Honours entry of their second discipline in this calendar for details. All students who elect to receive the Bachelor of Arts (Combined Honours) must (i) write the Honours Research Essay, if required, in the other discipline and (ii) must transfer to the Bachelor of Arts Honours program as a Combined Honours student. Students who are not required to present an Honours Research Essay by the other discipline, but who nevertheless prefer to graduate as a Bachelor of Arts student, must also transfer to the Bachelor of Arts Honours program. Such students must request an Internal Degree Transfer at least 60 days before the completion of the final courses required for their degree to assure their graduation at the next convocation.

Combined Honours programs in Journalism and other disciplines are available only to students registered in Journalism.

### **Combined Honours, Journalism and Philosophy**

Course requirements are:

1. Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421, and two of 28.425★, 28.426★, 28.427★, 28.428★;
2. 7.0 credits in Philosophy, to include 6.0 credits beyond the 100-level, of which 1.0 credit must be at the 400-level and must be taken at Carleton.
3. 1.0 French language credit; acceptable 100-level French courses are any of 20.107, 01.108, 01.117, 20.145, and 20.160;
4. 1.0 approved credit in Canadian history. (Students who plan to practice journalism in another country may be advised to choose a different History course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.)
5. Approved options to make up a program of 20.0 credits.

### **B.J. Honours with a Concentration in Psychology**

**Note:** The following course pattern does not constitute a Combined Honours program in Journalism and Psychology.

Course requirements are:

1. Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421 and two of 28.425★, 28.426★, 28.427★ and 28.428★;
2. Psychology 49.100, 49.200, two of 49.210★, 49.220★, 49.230★, 49.250★, 49.260★, 49.270★; 2.0 credits in Psychology chosen in consultation with members of the Department from Psychology courses in the areas of behavioral neuroscience, community and social psychology, perception and cognition, developmental psychology, or personality and assessment; and 1.0 optional credit in Psychology.
3. 1.0 French language credit; acceptable 100-level French courses are any of 20.107, 01.108, 01.117, 20.145, and 20.160;
4. 1.0 approved credit in Canadian history. (Students who expect to practice journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.)
5. Approved options to make up a program total of 20.0 credits.

## **Admission, Continuation, and Graduation**

### **Admission and Continuation**

For admission to the First year, students are required to present:

The OSSD, or the equivalent, including six OACs with an average of 65 percent or better; or the successful completion of Qualifying-University year.

Although not required for admission, an OAC in English is recommended.

It should be noted that the number of student spaces in the School is limited. Because of this it may not be possible to grant admission to all applicants who meet the foregoing requirements. Ad-



mission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the course.

Admission to Second year will be guaranteed only to First-year Journalism students who achieve a *B+* or better in Journalism 28.100 and a CI of 8.00 in First year on 5.0 full credits. For information on calculation of the CI, refer to p. 80.

The School also maintains a number of places in Second year for students who wish to transfer from Carleton or elsewhere. Normally, offers are made to students with an overall GPA equivalent to *A-* or better.

Students may not continue into 300-level or higher courses without satisfactory standing.

Admission to these courses will be based on a minimum of:

- (a) *C* standing in Journalism 28.221;
- (b) an average of *C+* in the four Journalism courses taken for credit in the first two years: Journalism 28.100, 28.221, 28.225★ and 28.251★;
- (c) an overall GPA of 4.0.

**Note:** Journalism students must become reasonably proficient in computer keyboarding as soon as possible. Most assignments in the professional Journalism courses are done by computer.

## Graduation Requirements

In order to graduate, students must fulfil all University regulations (see p. 49) and all Faculty regulations (see p. 82), in addition to all School regulations.

In addition to the graduation requirements of the Faculty of Public Affairs and Management, a candidate for the degree of Bachelor of Journalism with Honours must have a *C+* average in the Journalism courses, with *C* or better in the reporting courses, a *C-* or better in each other Journalism course, and be recommended for graduation by the School.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

### Journalism 28.100

#### Introduction to Journalism Studies

In first term, the basics of journalistic literacy and writing with an explanation of journalistic style. In second term, an introduction to the social, philosophical and historical contexts of journalism.

Prerequisite: For Journalism Honours students only.

Lectures and discussion three hours a week.

### Journalism 28.216★

#### The Documentary

Examination of the work of individual film makers, of documentary styles and of organizations and institutions in the context of the history of documentary film making, including documentaries made for television. Non-fiction films other than documentaries may be considered. (Also listed as Film Studies 19.216★.)

Precludes additional credit for Journalism 28.215 (19.215).

Prerequisite: Film Studies 19.100 or permission of the School.

Lectures and screening two hours, two days a week.

### Journalism 28.221

#### Fundamentals of Reporting

An introduction to the techniques of news gathering, the standard rules of news and feature writing, elements of news judgment, interviewing skills, a sense of narrative, and ethical reflection.

Precludes additional credit for Journalism 28.220 (last offered 1995-96).

Prerequisite: For Second-year Honours Journalism students and students who transfer into the program.

Lectures, discussion and practicum three hours a week.

### Journalism 28.225★

#### Journalism's View of the Languages and Institutions of Public Life

An introduction to the major political institutions of Canada; the policy process and the avenues for public participation in government at the federal, provincial and municipal levels; the economy; the arts community; and the like.

Prerequisite: For Second-year Honours Journalism students and students who transfer into the program.

Lectures and discussion three hours a week.

### Journalism 28.251★

#### Communications Law I

A survey of laws that affect the Canadian media. Specific areas include the development of freedom of expression, the Charter of Rights and Freedoms, and statutory and common law limitations on freedoms of the press, including publication bans, libel and contempt of court. (Also listed as Mass Communication 27.251★.)

Precludes additional credit for Journalism 28.351★, Mass Communication 27.351★ or Law 51.351★ (last offered 1996-97).

Prerequisite: Journalism 28.100 or Mass Communication 27.111 or permission of the School.

Lectures and discussion three hours a week.

### Journalism 28.300

#### The Modern Environment

A seminar course for Journalism students in which a number of texts drawn from the social sciences, literature, journalism and philosophy are considered for their contributions to an understanding of contemporary society and the issues that provide the background to much of contemporary journalism.

Prerequisite: Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Seminar three hours a week.

### Journalism 28.305★

#### International Media Systems

Examination of the flow of global communication and information and their impact on our views of the world. Attention to the relationship between Canadian media and regional and international media institutions and systems. (Also listed as Mass Communication 27.305★.)

Prerequisite: Mass Communication 27.211 or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Lectures and discussion three hours a week.

### Journalism 28.306★

#### Comparative Media Studies

The comparative study of one or more of media content, effects, organization, operation, and criticism, and related theoretical perspectives. (Also listed as Mass Communication 27.306★.)

Prerequisite: Mass Communication 27.211 or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Lectures and discussion three hours a week.

### Journalism 28.315★

#### Questions of Documentary Practice

This course examines the theoretical implications of documentary film and documentary television practice. (Also listed as Film Studies 19.315★.)

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the School.

### Journalism 28.325

#### Intermediate Reporting

The course will enhance students' skills in information-gathering, news and feature writing, story development, news judgment, computer-assisted reporting, interviewing skills and ethics.

Precludes additional credit for Journalism 28.320 (last offered 1996-97).

Prerequisite: Journalism 28.221.

Lectures and practicum three hours a week.

### Journalism 28.326

#### Introduction to Broadcast Journalism

An introduction to the principles and practices of broadcast reporting. In this practical course students will produce journalistic reports for television and radio. Students will also begin producing newscasts.



Precludes additional credit for Journalism 28.220 (last offered 1995-96).

Prerequisite: Journalism 28.221.

Lectures and practicum three hours a week.

#### Journalism 28.333

##### **Film and Society**

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Film Studies 19.333.)

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the School.

Screening three hours a week, lecture one hour a week.

#### Journalism 28.352★

##### **Telecommunications Regulation**

The law regulating Canadian broadcasting and communications industries. Focus on the Canadian Radio-Television and Telecommunications Commission. Topics may include: administrative formulation of policy, ownership rules, program content and quality, access to the media, cablevision licensing and control, alternative sanctions. (Also listed as Mass Communication 27.352★ and Law 51.352★.)

Prerequisite: One of Law 51.203, 51.204 or 51.205, or a 200-level Journalism or Mass Communication credit.

Lectures and discussion three hours a week.

#### Journalism 28.400

##### **Theoretical and Critical Aspects of Journalism**

This course will offer a theoretical overview of the news media in Canada, and the conditions under which they operate. It will study critiques of the media, including ethics.

Precludes additional credit for Journalism 28.200 (last offered 1995-96).

Prerequisite: For Fourth-year Honours Journalism students.

Lectures and discussion three hours a week.

#### Journalism 28.410★

##### **Special Topic**

An examination of a topic in journalism not covered in depth in other courses. Topics may vary from year to year.

Seminar three hours a week.

#### Journalism 28.411★

##### **Special Topic**

An examination of a topic in journalism not covered in depth in other courses. Topics may vary from year to year.

Seminar three hours a week.

#### Journalism 28.421

##### **Specialized Reporting**

A seminar/workshop in one area of public affairs reporting. Offerings may include politics and government, international issues, the arts, the economy, science and technology, social issues, sports. Emphasis on explanatory/analytical reporting, culminating in an extended work of journalism in any medium, resources permitting.

Prerequisites: Journalism 28.325 and 28.326.

Lectures, discussion and seminars three hours a week.

#### Journalism 28.425★

##### **Professional Practices: Newspaper Publishing**

A workshop course designed to give students instruction in community newspaper publishing.

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note: No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously.

28.425★ may not be repeated.

Workshops averaging eight hours a week.

#### Journalism 28.426★

##### **Professional Practices: Radio News and Current Affairs**

A workshop course designed to give students instruction in radio news and current affairs.

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note: No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously.

28.426★ may not be repeated.

Workshops averaging eight hours a week.

#### Journalism 28.427★

##### **Professional Practices: Television News and Current Affairs**

A workshop course designed to give students instruction in television news and current affairs.

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note: No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously.

28.427★ may not be repeated.

Workshops averaging eight hours a week.

#### Journalism 28.428★

##### **Professional Practices: Specialized Media**

A workshop course designed to give students instruction in a specialized area such as radio documentary, video documentary, film documentary, editing, magazine writing, photojournalism. Not all specialties will be offered each year.

Precludes additional credit for Journalism 28.321★ (last offered in 1997-98).

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note: No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously.

28.428★ may not be repeated.

Lecture and practicum two hours a week.

#### Journalism 28.437★

##### **Gender and the Journalist**

Using theoretical and textual analysis, this course examines the roles that social concepts of gender have played in several of the following: journalism history, journalistic expression and professional practice, professional status, cultural representations and expectations of the journalist, and the alternative or specialized media.

Prerequisite: Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Seminar three hours a week.

#### Journalism 28.490

##### **Honours Tutorial**

Students analyze some major achievements in contemporary journalism, through individual or group research. Students also have the opportunity to acquire background and experience in the managerial aspects and production of print and broadcast journalism.

Prerequisite: Fourth-year B.J. (Hons.) standing.

#### Journalism 28.498

##### **Honours Research**

Students in this course have to carry out directed research and prepare a project under faculty supervision. The deadline for completion of the Honours research project is April 1.

Prerequisite: For B.J. Honours students only admitted prior to 1995-96.\*

\* Students should refer to general Faculty regulations regarding submission of Honours Essays (p. 79).

# Law

## (Public Affairs and Management)

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C473 Loeb Building  
Telephone: 520-3690

### Academic Administration

**Chair,** T.B. Dawson

**B.A. (Honours) and B.A. Supervisor,** M. Mac Neil

**Graduate Supervisor,** D. Majury

### Teaching Staff

#### Professors

**R. Lynn Campbell**, LL.B. (Western Ontario), LL.M. (London), of the Bar of Ontario • **Paul J. Davidson**, B.Eng. (Carleton), LL.B. (Ottawa), LL.M. (London), of the Bar of Ontario • **Donald Fraser**, LL.B. (Queen's), LL.M. (Osgoode Hall), of the Bar of Ontario • **A.J. Hunt**, B.A., LL.B., Ph.D. (Leeds) • **M.H. Ogilvie**, B.A. (Toronto), LL.B. (Dalhousie), M.A., D.Phil. (Oxford), F.R.S.C., of the Bars of Nova Scotia and Ontario

#### Associate Professors

**Amy L. Bartholomew**, B.A. (Colorado), M.A. (Carleton), LL.B. (Ottawa) • **Maureen Davies**, B.A., LL.B. (Toronto), LL.M. (Wales) • **T. Brettel Dawson**, LL.B. (Canterbury), LL.M. (Osgoode Hall), of the Bar of New Zealand • **David W. Elliott**, B.A. (British Columbia, Oxford), M.A., D.Phil. (Oxford) • **James A. MacKenzie**, B.Sc. (Mount Allison), LL.B. (Ottawa), Ph.D. (London) • **Diana Majury**, B.A. (Manitoba), LL.B. (Queen's), LL.M., S.J.D. (Wisconsin-Madison) • **Renate M. Mohr**, B.A. (York), LL.B., LL.M. (Queens) • **Michael J. Mac Neil**, B.Sc., LL.B. (Dalhousie), LL.M. (Harvard), of the Bar of Nova Scotia • **C. Neil Sargent**, LL.B. (Nottingham), LL.M. (York), D.E.I. (Amsterdam) • **Ronald P. Saunders**, B.A., LL.B. (Dalhousie), LL.M. (London) • **Peter Swan**, B.A., LL.B. (Dalhousie), M.E.S. (York), LL.M. (Osgoode Hall) • **Barry Wright**, B.A. (Toronto), LL.B. (York), LL.M. (London School of Economics), D.Jur. (York)

#### Assistant Professors

**Jane Dickson-Gilmore**, B.A., M.A. (Simon Fraser), Ph.D. (London) • **M. McMahon**, B.Soc.Sc. (Dublin), M.A., Ph.D. (Toronto) • **Rosemary E. Warskett**, B.A. (Queen's), M.A. (Carleton)

#### Lecturer

**Cheryl Picard**

#### Adjunct Research Professors

**C. Jaekl** • **B. Leighton** • **M. Los** • **G. Petrauskas** • **P. Reed**

#### Adjunct Professors

**Patrick J. Fitzgerald** • **K. McShane** • **J. George Neuspiel** • **D. Wayand**

#### Sessional Lecturers

**E. Adjin-Tettey** • **D. Adlard** • **L. Atkinson** • **J. Blakey** • **J. Clark** • **D. Dwoskin** • **K. Egli** • **D. George** • **J. Hale** • **N. Hansen** • **N. Ketchum** • **B. Leighton** • **J. McMunagle** • **C. McNaught** • **M.A. Nixon** • **T. Purvis** • **R. Ramkay** • **J. Roberts** • **V. Steeves** • **C. Stout** • **S. Tanner** • **D. Thomas** • **D. Wishart**

### General Information

The Department of Law provides a unique forum for the study of law in an interdisciplinary environment. Emphasis is placed on an approach that views law as a social phenomenon, and that situates the study of legal structures, rules and institutions within their social, economic and political context. The Department of Law is characterized by an approach to the study of law that is firmly rooted in the social science tradition of enquiry.

The Department does not attempt, in any manner, to offer a "pre-law" program for students intending to pursue professional vocational training in law schools. Nor does completion of courses or programs qualify anyone to practice law or give counsel in legal matters. The interdisciplinary and social sciences perspectives on

legal issues offered in the Department's courses do serve as valuable background to a wide variety of career pursuits, including professional and administrative areas as well as supporting further academic studies.

The Department of Law offers programs leading to both B.A. (Honours) and B.A. degrees in Law. Students may also undertake the study of law in a Combined B.A. (Honours) or Combined B.A. program in conjunction with another discipline.

### Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 49) all Faculty regulations including First-Year



Seminar and Breadth courses, (see p. 72), and all Major regulations and requirements set out below.

The grade-point average (GPA) for purposes of entry into, continuation in, and eligibility to graduate from Law shall be calculated over all successfully completed, graded credits used to meet the specific program requirements in Law. Additional courses in Law are not included in the grade-point average.

### Overall graduation average

For students graduating in the B.A. (Honours) or Combined B.A. (Honours) program in Law, the overall graduation average shall be calculated over all successfully completed, graded credits counting towards the degree and used to meet the degree requirements.

### Law graduation average

For students graduating in the B.A. (Honours) or Combined B.A. (Honours) program in Law, the graduation average in Law shall be calculated over all successfully completed, graded credits used to meet the specific program requirements in Law. Additional courses in the Major are not included in the graduation average in Law.

## Introduction

**Notes:** Students in any Law program cannot include Law 51.231★, 51.232★, Business 42.261★ or 42.262★ towards the fulfillment of their degree requirements, even as options.

## B.A. (Honours) Program

**Note:** Beginning with the 1996-97 academic year, Law 51.498 (Honours Essay) is no longer required as part of the Honours program, and is also no longer offered as an option.

The Honours program is governed by the following regulations:

1. An Honours degree in Law requires at least 9.0 but not more than 12.0 Law credits. No credits beyond this maximum permissible total may be counted towards the 20.0 full credits required for the degree. Law credits must conform to the following prescribed pattern:

- (a) Law 51.100 with a grade of C+ or better; and
- (b) Law 51.203, 51.204 and 51.205 with an average grade of C+ or better; and
- (c) Law 51.397★; and
- (d) 3.0 additional Law credits at the 400-level or higher; and
- (e) at least 1.5 additional Law credits.

2. Honours students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Honours, and obtain a grade of C+ or better in Law 51.100.

3. In addition to the Law credits, Honours students must take at least 3.0 additional credits in one other discipline. Students are advised to consult with the Department regarding this requirement.

**Note:** This does not apply to students who complete a concentration in Criminology and Criminal Justice.

## Combined B.A. (Honours) Program

**Note:** Beginning with the 1996-97 academic year, Law 51.498 (Honours Essay) is no longer required as part of the Honours program, and is also no longer offered as an option.

The Combined Honours program is governed by the following regulations:

1. A Combined Honours degree in Law requires at least 6.0 but not more than 8.0 Law credits. No credits beyond this maximum permissible total may be counted towards the 20.0 credits re-

quired for the degree. The maximum permissible total number of credits in both Major Subjects is 15.0. Law credits must conform to the following:

- (a) Law 51.100 with a grade of C+ or better; and
- (b) 2.0 credits chosen from Law 51.203, 51.204 or 51.205 with a GPA of 6.0 or better; and
- (c) Law 51.397★; and
- (d) at least 0.5 additional Law credit at the 300-level or higher; and
- (e) 2.0 additional Law credits at the 400-level or higher; and
- (f) an Honours Essay in the other discipline, if required to meet the requirements of that discipline.

2. Combined Honours students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Combined Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Combined Law Honours and obtain a grade of C+ or better in Law 51.100.

3. Students in a Combined Honours program must satisfy the general University regulations for B.A. Honours programs.

4. Where the Combined Honours is with the School of Journalism and Communication, the degree awarded will be the Honours Bachelor of Journalism with Law. Students are directed to the regulations of the School of Journalism.

## B.A. (Honours) and Combined B.A. (Honours) with a Concentration in Law, Policy and Government

### General Information

Academic requirements for the Concentration have been defined for B.A. (Honours) and Combined B.A. (Honours) Law students. The minimum GPA required over the courses in this Concentration is 6.5. The Concentration is open to students in the B.A. program. However, it is unlikely that a student could meet the requirements of the Concentration within the 15.0 credits required for the B.A. degree, so that courses extra to the primary degree would have to be taken.

The Concentration in Law, Policy and Government provides an opportunity for focused study on the interaction between law and policy development in the context of governmental decision-making. In addition to meeting the general requirements for an Honours or Combined Honours degree, students will be required to complete a selection of core and optional courses relating to the theme of law, policy and government. Students are expected to declare their intention to complete a Concentration by the end of their second year.

### Internship Option

Full-time students in the B.A. (Honours) in Law with a Concentration in Law, Policy and Government have the option to apply for an Internship Option of the Concentration. The Internship Option will require that the student complete an Internship, Law 51.459. Students who complete the Concentration with an Internship will receive the notation on their transcript and degree: B.A. (Honours) in Law with a Concentration in Law, Policy and Government: Internship. The Internship will be a one-term full-time employment arrangement in which students will work for a government department or a governmental or non-governmental organization in an area that will enable them to integrate academic and practical aspects of law relating to policy in government decision-making. Only a limited number of internships will be available, so that eligibility to enroll for this Option will be restricted. Students wishing to complete this Option must apply to the Law Department no later than the date specified by the Department before entering their fourth year of studies. Students must normally be eligible for fourth year standing to register in the Internship, and have a Law GPA of 8.0 or better. Acceptance into the Internship Option will be competitive.



Students can be considered for an internship only if they are eligible to work in Canada. The Internship will count as 1.0 credit towards the degree, and will require the submission of a written project report to be evaluated by the Internship supervisor, in addition to the completion of the work component. Students are normally expected to complete at least one term of full-time studies following the completion of the Internship. Students may register in only 0.5 additional credits while completing the Internship requirement. Students will normally only be entitled to complete one internship.

### **B.A. (Honours) in Law with a Concentration in Law, Policy and Government**

The B.A. (Honours) in Law with a Concentration in Law, Policy and Government program is governed by the following regulations:

1. An Honours degree in Law with a Concentration in Law, Policy and Government requires at least 10.0 but not more than 12.0 Law credits. No credits beyond this maximum permissible total may be counted towards the 20.0 credits required for the degree. Law credits must conform to the following pattern:
  - (a) Law 51.100 with a grade of C+ or better; and
  - (b) Law 51.203, 51.204 and 51.205 with a GPA of 6.0 or better; and
  - (c) Law 51.356★
  - (d) Law 51.397★, 51.305★, and 51.481★; and
  - (e) 1.5 credits chosen from 51.300★, 51.316★, 51.345★, 51.350★, 51.352★, 51.353★, 51.354★, 51.359★, 51.380★; and
  - (f) 1.5 credits chosen from 51.411★, 51.412★, 51.451★, 51.457★, 51.459★, 51.467★, 51.480★, 51.490★, 51.491★, 51.492★; and
  - (g) 1.0 additional Law credit at the 400-level.

#### **Notes:**

- (i) Students in the Internship Option must complete Law 51.459 and 0.5 additional credit listed in (f), above.
- (ii) Students who count Law 51.490, 51.491★ or 51.492★ towards the requirements of (e) above must complete an approved topic related to the theme of the Concentration.

#### **2. Honours students must either:**

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Honours, and obtain a grade of C+ or better in Law 51.100.

3. In addition to the Law credits, Honours students must take at least 3.0 additional credits in one other discipline. Students are advised to consult with the Department regarding this requirement.

### **Combined B.A. (Honours) in Law with a Concentration in Law, Policy and Government**

The Combined B.A. (Honours) in Law with a Concentration in Law, Policy and Government program is governed by the following regulations:

1. A Combined Honours degree in Law with a Concentration in Law, Policy and Government requires at least 7.0 but not more than 9.0 Law credits. The maximum permissible number of credits in both Majors subjects is 15.0. No credits beyond this maximum permissible total may be counted towards the 20.0 credits required for the degree. Law credits must conform to the following pattern:
  - (a) Law 51.100 with a grade of C+ or better; and
  - (b) Law 51.205 and one of 51.203 or 51.204 with a GPA of 6.0 or better; and
  - (c) Law 51.397★
  - (d) 51.305★, Law 51.356★, and 51.481★; and
  - (e) 0.5 credit chosen from 51.300★, 51.316★, 51.345★, 51.350★, 51.352★, 51.353★, 51.354★, 51.359★, 51.380★, and
  - (f) 1.5 credits chosen from 51.411★, 51.412★, 51.451★, 51.457★, 51.467★, 51.480★, 51.490★, 51.491★, 51.492★.

**Note:** Students who count 51.490, 51.491★ or 51.492★ towards the requirements of (f) above must complete an approved topic related to the theme of the Concentration.

2. Students in the Combined Honours in Law with a Concentration in Law, Policy and Government program must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Combined Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Combined Law Honours, and obtain a grade of C+ or better in Law 51.100.

3. Where the Combined Honours is with the School of Journalism and Communication, the degree awarded will be the Bachelor of Journalism with Law with a Concentration in Law, Policy and Government. Students are directed to the regulations of the School of Journalism and Communication.

### **B.A. (Honours) and Combined B.A. (Honours) with a Concentration in Business Law**

Academic requirements for the Concentration have been defined for B.A. (Honours) and Combined B.A. (Honours) Law students. The minimum GPA required over the courses in this Concentration is 6.5. The Concentration is open to students in all Honours Law programs as well as those in the B.A. program. However, it is unlikely that a student could meet the requirements of the Concentration within the 15.0 credits required for the B.A. degree, so that credits additional to the 15.0 would have to be taken.

The Concentration in Business Law provides an opportunity for focused study of the legal environment in which businesses operate. In addition to meeting the general requirements for a B.A. (Honours) or Combined B.A. (Honours) degree, students will be required to complete a selection of core and optional courses relating to the theme of business law. Students are expected to declare their intention to complete a Concentration by the end of their second year. Students wishing further exposure to business issues are advised to take a Minor in Business.

#### **Field Placement Option**

Full-time students in the B.A. (Honours) in Law program with a Concentration in Business Law have the option to apply to complete a 0.5 credit Field Placement in Business Law, Law 51.428★. The Field Placement would be with an approved business organization or in an approved business environment that will enable students to integrate academic and practical aspects of law relating to business. The field placement may require up to eight hours of paid or unpaid work per week for a term. Only a limited number of field placements will be available, so that registration in this option will be restricted. Students wishing to complete this option must apply to the Law Department no later than a date yet to be specified before entering their Fourth year of studies. Students must normally be eligible for Fourth-year Honours standing before registering in the Field Placement, and have a Law GPA of 8.0 or better. Acceptance into the Field Placement will be competitive.

### **B.A. (Honours) in Law with a Concentration in Business Law**

The B.A. (Honours) in Law with a Concentration in Business Law is governed by the following regulations:

1. An Honours degree in Law with a Concentration in Business Law requires at least 10.0 but not more than 12.0 Law credits. No credits beyond this maximum permissible total may be counted towards the 20.0 full credits required for the degree. Law credits must conform to the following pattern:
  - (a) Law 51.100 with a grade of C+ or better; and
  - (b) Law 51.203, 51.204 and 51.205 with a GPA of 6.0 or better; and
  - (c) Law 51.397★, 51.303★, 51.321★, and 51.326★; and
  - (d) 1.0 credit chosen from 51.325★, 51.327★, 51.328★, 51.341★, 51.345★; and
  - (e) 2.0 credits chosen from 51.420★, 51.422★, 51.428★, 51.429★, 51.432★, 51.442★, 51.481★, 51.490★, 51.491★, 51.492★; and
  - (f) 1.0 additional Law credit at the 400-level.



**Note:** Students who count Law 51.490, 51.491★ or 51.492★ towards the requirements of (e) above must complete an approved topic related to the theme of the Concentration.

2. Honours students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Honours Law, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Honours, and obtain a grade of C+ or better in Law 51.100.

3. In addition to the Law credits, Honours students must take at least 3.0 additional credits in one other discipline. Students are advised to consult with the Department regarding this requirement.

### **Combined B.A. (Honours) in Law with a Concentration in Business Law**

The Combined Honours in Law with a Concentration in Business Law is governed by the following regulations:

1. A Combined Honours degree in Law with a Concentration in Business Law requires at least 7.0 but not more than 9.0 Law credits. The maximum permissible number of credits in both Majors subjects is 15.0. No credits beyond this maximum permissible total may be counted towards the 20.0 full credits required for the degree. Law credits must conform to the following pattern:

- (a) Law 51.100 with a grade of C+ or better; and
- (b) Law 51.203, and either 51.204 or 51.205 with a GPA of 6.0 or better; and
- (c) Law 51.397★, 51.303★, 51.321★, and 51.326★; and
- (d) 2.0 credits chosen from 51.420★, 51.422★, 51.428★, 51.429★, 51.432★, 51.442★, 51.481★, 51.490, 51.491★, 51.492★;

**Note:** Students who count Law 51.490, 51.491★ or 51.492★ towards the requirements of (d) above must complete an approved topic related to the theme of the Concentration.

2. Honours students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Combined Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Combined Law Honours, and obtain a grade of C+ or better in Law 51.100.

3. Where the Combined Honours is with the School of Journalism and Communication, the degree awarded will be the Bachelor of Journalism with Law with a Concentration in Business Law. Students are directed to the regulations of the School of Journalism and Communication.

### **B.A. Program**

The B.A. program is governed by the following regulations:

1. A B.A. degree in Law requires at least 6.0 but not more than 8.0 Law credits. No credits beyond this maximum permissible total may be counted towards the 15.0 credits required for the degree. Law credits must conform to the following pattern:

- (a) Law 51.100 with a grade of C- or better; and
- (b) 2.0 credits chosen from Law 51.203, 51.204 or 51.205; and
- (c) at least 3.0 additional Law credits, one of which must be at the 300-level or higher.

2. Students must either:

- (a) have taken Law 51.100 or its equivalent, and obtained a grade of C- or better at the time of declaring a Law Major, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Major, and obtain a grade of C- or better in Law 51.100.

3. In addition to the Law credits, B.A. students must take at least 3.0 additional credits in one other discipline. Students are advised to consult with the Department concerning this regulation.

**Note:** This does not apply to students who complete a concentration in Criminology and Criminal Justice.

4. Students in the B.A. program must satisfy the general University regulations for B.A. programs.

### **Combined B.A. Program**

The Combined B.A. program is governed by the following regulations:

1. A Combined B.A. degree in Law requires at least 5.0, but not more than 7.0 Law credits or their equivalent. No credits beyond this maximum permissible total may be counted towards the 15.0 full credits required for the degree. Law credits must conform to the following prescribed pattern:

- (a) Law 51.100 with a grade of C- or better; and
- (b) 2.0 credits chosen from Law 51.203, 51.204 or 51.205; and
- (c) at least 2.0 additional Law credits, one of which must be at the 300-level or higher.

2. Combined B.A. students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C- or better at the time of declaring a Combined Law Major, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Combined Law Major, and obtain a grade of C- or better in Law 51.100.

### **Criminology and Criminal Justice Program**

For details see p. 211.

### **Study Abroad Option Certificate in Financial Studies and Law**

The Department participates in an International Exchange with the School of Financial Studies and Law at Sheffield Hallam University in the U.K. The Exchange provides an opportunity for students in the B.A. (Honours) in Law program to study law in a comparative setting within a professional law school firmly rooted in the social scientific study of law. Students accepted into the Exchange select courses from the LL.B. and Financial Studies syllabi of the School and from the Social Studies program at Sheffield Hallam University. Students are eligible to apply to participate in the Exchange for their Third or Fourth year of study. Third-year standing in Law and completion of 51.100 and two of 51.203, 51.204, and 51.205 are the minimum requirements to be accepted into the Exchange. Students interested in the Exchange should contact the Department as early as possible, and in any event must apply by March 1. Selection will be made by the Department of Law based on GPA overall program performance, and potential for success in the Exchange.

In addition to receiving credits toward their B.A. (Honours), students who successfully complete 6 units in the School of Financial Studies and Law at Level 2 or above will receive a Certificate of Financial Studies and Law from Sheffield Hallam University. Interested students should contact the Department.

### **Off-Campus Courses**

Introductory Law courses may be offered off-campus by the Department of Law. The particular course(s) offered and location(s) will be announced well in advance of the period of registration.

### **Prerequisites**

Students should note that many Law courses have designated prerequisites. Students who have not obtained credit for designated prerequisites may be required to withdraw from the applicable course.

In some instances permission of the Department may be granted as an alternative to a designated prerequisite. It must not be assumed that such permission will be granted automatically. Further, it may be granted subject to certain conditions, including the fulfillment of preliminary reading requirements or the submission of some written work. Students who have not obtained permis-



sion of the Department may be required to withdraw from the applicable course.

### Waiver of Prerequisites

The formal requirements can only be waived by express written permission of the Department in exceptional circumstances and on special written application.

## Cross-Listed Courses

Students should note that the Department of Law will normally regard a cross-listed course as a credit in the department in which the student registers. Students are advised to consult with the relevant departments before deciding under which department they should register in cross-listed courses.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in Law 01.118

### Law and Cyberspace

See course description on p. 85.

First-Year Seminar in Law 01.119

### Law and Literature

See course description on p. 85.

First-Year Seminar in Law 01.120

### Law and Dispute Resolution

See course description on p. 85.

First-Year Seminar in Law 01.121

### Governance and the Rule of Law

See course description on p. 85.

First-Year Seminar in Law 01.122

### Global Governance and Human Rights

See course description on p. 85.

Law 51.100

### Introduction to Legal Studies

Concepts, sources, nature and function of law; law and social change; historical and constitutional foundations of the Canadian legal system; common and civil law traditions; statutory interpretation and precedent; legal institutions; the role of judges, lawyers and lay persons; accessibility; alternative dispute resolution.

Precludes additional credit for Law 51.101 ★ and 51.102 ★.

Lectures two hours a week and group workshops one hour every second week.

Law 51.203

### Introduction to Private Law Relationships

Origins and scope of modern private law relationships; values espoused by legal personality, property and obligations arising from contracts, torts and the law of restitution will be studied; interaction of private law categories; role of the state in ordering private relations.

Prerequisite: Law 51.100 with a grade of C- or better.

Lectures three hours a week.

Law 51.204

### An Introduction to Criminal Law in Context

Canadian criminal process; nature and purpose of criminal law; criminal acts distinguished from civil wrongs; origins and development of principles and procedures; categories of criminal conduct; role of enforcement agencies and courts; criminal correction; relationship between criminal activity and deviant behavior.

Precludes additional credit for Law 51.234.

Prerequisite: Law 51.100 with a grade of C- or better.

Lectures three hours a week.

Law 51.205

### Introduction to Public Law

Law relating to the state and its relationship to other legal persons; basic principles of constitutional law, administrative law and selected areas; special features and problems of public law; implications of the expanded new role of modern governments; legal and alternative processes.

Prerequisite: Law 51.100 with a grade of C- or better or Political Science 47.100 with a grade of C- or better.

Lectures three hours a week.

Law 51.300 ★

### The Legal Process

Advanced topics in the legal process such as the nature and function of law, dispute resolution and law-making.

Precludes additional credit for Law 51.200.

Prerequisite: Third-year standing.

Lectures three hours a week.

Law 51.301 ★

### Women and the Legal Process

How the legal process has affected the status of women. Areas of concentration within the Canadian context include the criminal law, citizenship and immigration, education, employment, and welfare and social services.

Prerequisite: Third-year standing.

Lectures three hours a week.

Law 51.303 ★

### Contracts

The enforcement of promises and agreements; basic doctrines and underlying principles of the law of contract are studied from formation of the contract to remedies for breach of contract; role of contract for economic and social purposes is also considered.

Prerequisite: Law 51.203.

Lectures three hours a week.

Law 51.305 ★

### Law and Regulation

Definitions and goals of regulation; contemporary theories and debates about legal and non-legal approaches to regulation. Approaches studied may include market mechanisms, public agency regulation, self-regulation and governance in co-operation with associations in civil society.

Prerequisite: Law 51.203 or 51.205.

Lectures three hours a week.

Law 51.306 ★

### Mediation

Theory and practice of mediation; historical roots and influences; contrasts with formal litigation and other dispute resolution processes; issues of social and legal control; critiques, including feminist, Marxist and critical race theory; issues of power, gender, race and class; application to contemporary issues and disputes.

Prerequisites: Law 51.100 and one of 51.203, 51.204, 51.205 or Business 42.261 ★.

Lectures three hours a week.

Law 51.311 ★

### Philosophy of Law: The Nature of Law

The concept of law, leading theories of law and related concepts such as rules and obligations, power and authority, coercion, and justice. (Also listed as Philosophy 32.311 ★.)

Precludes additional credit for Law 51.310 or Philosophy 32.350.

Prerequisite: Third-year standing.

Lectures three hours a week.

Law 51.312 ★

### Philosophy of Law: The Logic of the Law

The nature of legal reasoning and concepts particularly used in the course of legal reasoning such as rights and duties, ownership and possession, liability and punishment. (Also listed as Philosophy 32.312 ★.)

Precludes additional credit for Law 51.310 or Philosophy 32.350.

Prerequisite: Third-year standing.

Lectures three hours a week.



## Law 51.315

**Theory of Law and Politics**

Theories of law and politics; prominent thinkers and schools of thought; influence on legal and political institutions. Topics include law and ethics, justice and equity, positivism and natural law, state absolutism, codifications, and anthropological and historical theories of law and society.

Precludes additional credit for Law 51.210.

Prerequisites: Law 51.100 and one of Law 51.203, 51.204, 51.205, or Political Science 47.100 and 47.230.

Lectures three hours a week.

## Law 51.316★

**Sociology of Law**

Development of law in the context of modernity, the West and capitalism. Writings on law by Durkheim, Weber and Marx; their influence on the development of the sociology of law. (Also listed as Sociology 53.381★.)

Prerequisite: One of Law 51.203, 51.204, or 51.205.

## Law 51.321★

**The Legal Framework of Business Enterprises**

Forms of carrying on business activity: proprietorships, partnerships, corporations and Crown entities. The rights and obligations of such business enterprises both internally and in relation with other persons. The relationship between legal form and economic function. The role of state intervention.

Precludes additional credit for Law 51.321.

Prerequisite: Law 51.203.

Lectures three hours a week.

## Law 51.323★

**The Legal Nature of Property**

An examination of the nature and functions of property as a legal and social institution, with particular reference to theories of property, the scope of property interests, and the relationship between individual property rights and the state.

Precludes additional credit for Law 51.323.

Prerequisite: Law 51.203.

Lectures three hours a week.

## Law 51.324

**Tax Law and Policy**

An introduction to federal income taxation, both personal and corporate, and a review of the Canadian tax system generally with some reference to the development, implementation and enforcement of tax policy.

Prerequisite: Law 51.203 or 51.220 or 51.232★.

## Law 51.325★

**Consumer Law**

Need for consumer protection in the provision of goods and services; traditional legal protection by statute and common law; legislative responses to consumer pressures; judicial response in recent Canadian, English and American law; reform of consumer law.

Precludes additional credit for Law 51.325.

Prerequisite: Law 51.203 or 51.220 or 51.232★ or Business 42.262★.

Lectures three hours a week.

## Law 51.326★

**Banking Law**

The law relating to banks and banking; the nature of the legal relationship created; legal rights and duties of the parties involved. Consumer and corporate aspects of banking (including computerization and electronic funds transfers); regulations of banking.

Prerequisite: Law 51.203 or 51.220 or 51.232★ or Business 42.262★.

Lectures three hours a week.

## Law 51.327★

**International Economic Law: Trade and Investment**

Topics may include: the international sale of goods, finance of transnational transactions, international carriage of goods, insurance, agency and trading houses; other forms of trade, e.g., counter-trade, foreign investment; dispute settlement of international disputes by litigation and arbitration.

Precludes additional credit for Law 51.322.

Prerequisite: Law 51.203 or 51.232★ or Business 42.262★.

## Law 51.328★

**International Economic Law: International Regulation**

International regulation of trade and investment through bilateral, regional and multilateral treaties and agreements. Topics may include: WTO, NAFTA, the EU, UNCTAD, intergovernmental commodity agreements, dispute settlement.

Precludes additional credit for Law 51.322.

Prerequisite: Law 51.203 or 51.205.

Lectures three hours a week.

## Law 51.333★

**Injury, Compensation and the Law**

Problems of injury compensation; legal responses in their economic, historical, comparative, philosophical or sociological contexts; definitions of personal injury; objectives and effectiveness of legal intervention; forms of compensation; relation between private law and state regulation.

Precludes additional credit for Law 51.333.

Prerequisite: Law 51.203.

Lectures three hours a week.

## Law 51.335★

**Law, Crime and Society in Historical Perspective**

The history of the relationship between the criminal law system and society. Changing issues in the criminal law and the nature of institutional responses, covering medieval to early nineteenth-century England and nineteenth to early twentieth-century Canada.

Prerequisite: Third-year standing.

Lectures three hours a week.

## Law 51.336★

**Criminal Law: Process and Politics**

Criminal law process in Canada; structure and use of the process examined for fairness, defects, and possible reform initiatives. Issues concerning gender, race and class bias in the implementation and application of the criminal law.

Prerequisite: Law 51.204.

Lectures three hours a week.

## Law 51.337★

**Young Offenders and the Law**

A review of the Young Offenders Act within the framework of the Canadian justice system, with particular emphasis on historical and philosophical developments and objectives. Current topics include: constitutional issues, procedure, confessions, transfers, sentencing options, alternative measures, reviews, and possible amendments.

Precludes additional credit for Law 51.493★ (if taken in 1987-88).

Prerequisite: Law 51.204.

Lectures three hours a week.

## Law 51.341★

**Employment Law**

Legal regulation of the employment relationship; its contractual basis; defining employment; rights and duties of employees and employers; termination of employment; statutory regulation through employment standards legislation, human rights codes, workers' compensation acts, occupational health and safety and related statutes.

Precludes additional credit for Law 51.320.

Prerequisite: Law 51.203 or Business 42.261★.

Lectures three hours a week.

## Law 51.342★

**Landlord and Tenant Relations**

An examination of the nature and history, creation and termination of the landlord and tenant relationship in Ontario, focusing on the rights and duties of both landlord and tenant under common law and statute and the legal distinction between residential and commercial tenancies. Particular attention is given to the recent statutory regulation of residential tenancies in Ontario, and the implications of rent control and security of tenure for housing policy.



Precludes additional credit for Law 51.320.

Prerequisite: Law 51.203 or 51.220.

Lectures three hours a week.

#### Law 51.345★

##### **Labour Law**

Role of law in industrial relations; effect of law on collective bargaining relationships; recognition of bargaining agent; regulation of bargaining; administration of the collective agreement; methods of conflict resolution.

Precludes additional credit for Law 51.441.

Prerequisite: Law 51.200 or 51.203 or 51.205. Permission may be given to students in Business or Directed Interdisciplinary Studies who have completed Law 51.231★ or Business 42.261★.

Lectures three hours a week.

#### Law 51.348★

##### **Legal Aspects of Sport**

Legal regulation of sporting activities in Canada. Subjects include constitutional power to regulate sport, government involvement in sports administration, sports violence, civil liability for sports injuries, sex discrimination, professional and intercollegiate leagues, player employment contracts, disciplinary proceedings.

Prerequisite: Law 51.203 or 51.205.

Lectures three hours a week.

#### Law 51.350★

##### **Constitutional Law**

An investigation of the Canadian constitution. Sovereignty, the nature and units of executive, legislative, and judicial power in Canada as interpreted by the courts. The distribution of powers under the Canadian constitution including an investigation of contemporary problems of federalism. Problems of judicial review.

Precludes additional credit for Law 51.450.

Prerequisite: Law 51.205 or a Political Science course in Canadian government.

Lectures three hours a week.

#### Law 51.351★

##### **Law and Communications**

The relationship between law, mass media and other forms of communications technology such as the Internet. Specific topics may include: the legal framework of freedom of expression and of the press; defamation, privacy, national security and contempt of court; human rights and the Charter.

Precludes additional credit for Mass Communication 27.251★ or Journalism 28.251★ or Mass Communication 27.351★ or Journalism 28.351★.

Prerequisite: One of Law 51.203, or 51.204, or 51.205.

#### Law 51.352★

##### **Telecommunications Regulation**

The law regulating Canadian broadcasting and communications industries. Focus on the Canadian Radio-Television and Telecommunications Commission. Topics may include: administrative formulation of policy, ownership rules, program content and quality, access to the media, cablevision licensing and control, alternative sanctions. (Also listed as Journalism 28.352★ and Mass Communication 27.352★).

Prerequisite: One of Law 51.203, 51.204 or 51.205; or 1.0 credit at the 200-level in Journalism or Mass Communication.

Lectures three hours a week.

#### Law 51.353★

##### **Equality and Anti-Discrimination Law**

Human rights issues and law in Canada; history and present day experiences of discrimination; critical exploration of law's effectiveness in responding to discrimination; meaning(s) of equality and discrimination; focus on Human Rights Codes — interpretation, administration, enforcement — some reference to s.15 of the Charter.

Precludes additional credit for Law 51.353.

Prerequisite: Law 51.204 or 51.205.

Lectures and seminars three hours a week.

#### Law 51.354★

##### **Law and Aboriginal Peoples of Canada**

The legal situation of aboriginal peoples in Canada. Topics include status, aboriginal rights, treaties, legislative jurisdiction and the constitutional framework, aboriginal claims, and self-government. Comparative references to aboriginal policy in other countries.

Prerequisite: Law 51.205 or 51.353★ or 51.353, or 51.359★.

Lectures three hours a week.

#### Law 51.356★

##### **Administrative Law**

Structure and procedure of Canadian administrative authorities; policy, statutory and judicial environments in which they operate. Topics include: techniques for implementing public policy and structuring public authorities; statutory interpretation; procedural safeguards; exercise of statutory discretion; reconciling efficiency and fairness.

Precludes additional credit for Law 51.456★.

Prerequisites: One of Law 51.205, 51.305★, or 51.352★ (Journalism 28.352★, Mass Communication 27.352★), or Political Science 47.200.

Lectures three hours a week.

#### Law 51.358★

##### **Health Law**

Legal/ethical issues in health care regulation. Topics may include: regulation of health professions; economics of health care; informed consent/choice; regulation of drugs, devices and research; medical malpractice and other liability; mental health issues; patient/client records.

Precludes additional credit for Law 51.355★ and 51.493★ B (if taken in 1994-95 or 1995-96).

Prerequisite: Law 51.203, 51.204, or 51.205.

Lectures three hours a week.

#### Law 51.359★

##### **The Charter of Rights: Selected Topics**

Selected issues in the Canadian Charter of Rights and Freedoms.

Precludes additional credit for Law 51.353.

Prerequisite: Law 51.204 or 51.205.

Lectures and seminars three hours a week.

#### Law 51.363

##### **Public International Law**

An examination of the role of law in contemporary international relations. Nature, history and sources of international law; international personality of states; the status of international organizations and individuals; creation and effect of international obligations; importance and functions of law in the settlement of international disputes.

Precludes additional credit for Law 51.463.

Prerequisite: Law 51.100 or 51.200 or 51.205 or a Political Science or History course in international relations.

Lectures three hours a week.

#### Law 51.374★

##### **Local Government Law**

The legal framework of local and regional governments; the distribution of functions between the levels of local government and problems of the relationship between local government bodies and provincial and federal authorities; planning law and land use, regionalism and local government reform.

Precludes additional credit for Geography 45.374★ and Law 51.374.

Prerequisite: Law 51.205.

Lectures three hours a week.

#### Law 51.380★

##### **Law of Environmental Quality**

Various aspects of environmental law; pollution control, legal actions and remedies; legal foundations for participation in decision-making processes. Social, economic and political forces influencing the formulation and implementation of environmental law. Alternative forms of regulation that may articulate different demands.



Precludes additional credit for Law 51.380.

Prerequisite: Law 51.203, 51.204 or 51.205.

Lectures three hours a week.

#### Law 51.384

##### **Law of the Family**

Legal framework surrounding the family and family relationships in Canadian society. Topics include marriage and cohabitation, matrimonial support, custody and access, adoption, child protection, domestic violence, dissolution of marriage. State interventions through law; law and change in family structures; equality issues; dispute resolution processes.

Precludes additional credit for Law 51.284.

Prerequisite: Law 51.203.

Lectures three hours a week.

#### Law 51.395★

##### **Practicum in Criminal Justice**

This course provides experience in an institutional setting and supplements the theoretical approach of the classroom. An emphasis is placed on understanding the role of the particular agency within the wider institutional framework and also within a consistent and coherent policy on criminal justice.

Prerequisite: Open only to students formally admitted to, and registered in, the Criminology and Criminal Justice Concentration.

#### Law 51.397★

##### **Legal Research Methods**

Basic methods in the design and execution of research projects in law in a social science context. Research principles; theoretical approaches; law-related materials and research procedures. Computer-assisted legal research; problem solving, bibliographic and citation skills.

Prerequisites: Any two of Law 51.203, 51.204, or 51.205 and Honours standing.

Seminars three hours a week.

#### Law 51.401★

##### **Law, Family and Gender**

Relationship between family law and ideology of the family, gender roles and the reproduction of family structures. Social ramifications of family law; potential for family law reform as an agency of social change.

Prerequisites: Law 51.301★ or 51.384 and Fourth-year Honours standing.

Seminars three hours a week.

#### Law 51.402★

##### **Feminist Theories of Law**

The literature comprising feminist perspectives on law; theoretical bases of these perspectives; place of feminist theories within other critiques of law; significance of different feminist theories for equality theory and law reform strategies; unique contributions of the various perspectives.

Prerequisite: Law 51.301★ or Fourth-year Honours standing.

Seminars three hours a week.

#### Law 51.403★

##### **Historical Perspectives on Law, Economy and Society**

This course introduces students to the nature of the relationship between private law, and economic and social change. Theoretical perspectives of this relationship are illustrated with case studies of selected topics.

Prerequisite: Law 51.203.

#### Law 51.406★

##### **Church and State in the Laws of England, Scotland and Canada**

Legal nature of the interaction of church and state within an historical framework. Emphasis on Canada after the Charter of Rights and Freedoms and on religious pluralism and resistance to state intervention in church affairs. Interdisciplinary readings drawn from legal, historical and theological sources.

Prerequisite: Law 51.100.

Seminars three hours a week.

#### Law 51.410★

##### **Modern Legal Theory**

Realist and post-realist legal scholarship; emphasis on Canadian, American and British approaches. Topics include the Canadian treatise tradition, American legal realism, empirical approaches to legal problems, the sociological movement in law, critical and Canadian feminist legal scholarship, Marxian theories of law, normative economic theory.

Prerequisites: Any two of Law 51.203, 51.204, or 51.205.

#### Law 51.411★

##### **Contemporary Theories of Justice**

Selected major contemporary theories of justice such as those associated with Rawls, Walzer, and Habermas, with emphasis on both their procedural and substantive elements and their concrete ramifications for law, policy and political practice.

Precludes additional credit for Law 51.494A★ if taken between 1995-96, and 1997-98.

Prerequisite: Fourth-year Honours standing.

Seminars three hours a week.

#### Law 51.412★

##### **Contemporary Controversies in Rights Theory**

Selected controversies in rights theories and practices. Illustrative questions may include: Are human rights culturally relative? Can rights be justified after the demise of natural rights philosophy? Do rights undermine "difference"? Do communities benefit from a rights-based culture? Are "rights" forms of governance?

Precludes additional credit for Law 51.353.

Prerequisite: Fourth-year Honours standing.

Seminars three hours a week.

#### Law 51.417★

##### **Law in Modern Society**

Sociological and legal theory accounts of the changing role and function of law in modern society with particular reference to advanced capitalist societies. Topics include: the welfare state and the use of regulatory law; juridification and legalisation; counter-trends, deregulation, informalism, legal pluralism. (Also listed as Sociology 53.433★.)

Prerequisite: Law 51.311★, 51.315, 51.316★, or Sociology 53.381★.

Seminars three hours a week.

#### Law 51.420★

##### **Advanced International Economic Law**

Selected topics in international economic law. May include: the legal regulation of international economic activity; methods of dispute settlement; standardization and development of an autonomous international trade law; and selected conventions and institutions governing international economic law.

Prerequisite: Law 51.327★ or 51.328★

Seminar three hours a week.

#### Law 51.422★

##### **Legal Accountability of Management**

Role, function, and legal regulation of persons managing business enterprises. Status, social responsibility, fiduciary obligations and rights. Control and accountability of managers, obligations owed to the enterprise unit itself, constitutional rights of members, standards imposed by statutory regulation.

Precludes additional credit for Law 51.321.

Prerequisite: Law 51.321★.

Lectures three hours a week.

#### Law 51.428★

##### **Field Placement in Business Law**

Field placement in an approved business organization or environment. Evaluation consists of assessment by employer and student report graded by the departmental placement supervisor interpreting theoretical and practical experiences in business law.

Prerequisite: Fourth-year Honours standing; registration in the Concentration in Business Law; and permission of the Department.

Field placement one day a week.



**Law 51.429★****Advanced Topics in Business Law**

Examination of a selected advanced topic in business law. Topics to be announced in advance of registration each year.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminars three hours a week.

**Law 51.432★****Legal Regulation of Corporate Crime**

Legal, policy and theoretical perspectives on the regulation of corporate crime. Nature and causes of corporate crime. Selected case studies on the role of the state in regulating corporate behaviour. Failure of the criminal justice system to respond to corporate crime.

Prerequisites: Law 51.204 and one of Law 51.305★, 51.321★ or 51.380★, or 51.321.

Seminars three hours a week.

**Law 51.435★****Criminal Justice Reform: Theory and Practice**

Social transformation and criminal justice reform. Theoretical and practical reasons for the use of criminal law as an instrument of social control. Specific reform initiatives and processes. Alternate responses to social problems.

Prerequisites: Law 51.204 or 51.234 and Fourth-year Honours standing.

Seminars three hours a week.

**Law 51.436★****Contemporary Issues in Criminal Law**

Selected issues and problems in the area of criminal law. The topics may vary from year to year depending on demand and interest. The topics are announced in advance of registration.

For 1998-99 the topic for Section A is *Current Issues in Policing*. The role, mandate and legal authority of the police; governance of the police; the use of deadly force and other police powers; public accountability and oversight; models of policing; including community policing; delivery of police services to structurally disadvantaged groups; evaluating police performance.

Other topics may also be offered and students are advised to consult with the Department.

Prerequisite: Fourth-year Honours standing.

**Law 51.437★****Legal Medical Issues in Criminal Law**

Legal-medical issues, conflicts and relationships in the field of social control. Topics include mental disorder and criminal liability, diversion of offenders to civil commitment in hospital, insanity, automatism, fitness to stand trial, prediction of dangerousness, regulation of psychoactive drugs.

Prerequisites: Law 51.204 and Fourth-year Honours standing.

Seminars three hours a week.

**Law 51.438★****Sentencing: Theories and Practice**

Theories of sentencing, current sentencing laws and practices, perceptions of sentencing. Data on sentencing practice across Canada. Reforms in other jurisdictions. Critical review of the Canadian Sentencing Commission. Multidisciplinary approach using research and theory in law, criminology, social psychology and sociology.

Prerequisites: Law 51.204 and Fourth-year Honours standing. This course may not be taken by students who have completed the course as a special topics course.

Seminars three hours a week.

**Law 51.439★****Criminal Proceedings and Dissent: Political Offences and National Security Measures**

Historical and contemporary analysis of legal responses of Canadian governments to dissent, political opposition, insurrection, etc. Includes trial of political offences (treason, sedition, riot), national security measures (War Measures/Emergencies Act, Official Secrets Act), and other special powers (police, labour, immigration, parliamentary privilege, etc.)

Precludes additional credit for Law 51.436★ (if taken in 1990-91).

Prerequisites: Fourth-year Honours standing, Law 51.353★ or Law 51.359★ or Law 51.335★.

Seminars three hours a week.

**Law 51.442★****Employment Dispute Resolution**

Theory and practice of dispute resolution in employment relations; analysis of such techniques as negotiation, grievance and interest arbitration, mediation, investigation and litigation applied to a range of employment disputes such as collective agreements, termination of employment, discrimination, harassment, occupational health and safety, etc.

Precludes additional credit for Law 51.440★.

Prerequisites: Fourth-year Honours standing and one of Law 51.306★ or 51.341★ or 51.345★, or Business 42.262★ and 42.317★.

Seminars three hours a week.

**Law 51.445★****Labour Relations in the Public Service**

Collective bargaining in the public sector; emphasis on federal, Ontario and Quebec public services. Adapting accepted collective bargaining procedures and techniques to the public service; right to strike and essential industries; grievance procedures; public sector labour-management relations; issues of efficiency and loyalty.

Prerequisite: Law 51.341★ or 51.345★ or 51.441.

Seminars three hours a week.

**Law 51.451★****Selected Problems in Comparative Constitutional Law**

The topics of this course may vary from year to year. Topics may include comparative federalism, comparative study of civil liberties and human rights, comparative bases and theories of judicial review in their social, political, economic or historical contexts.

Precludes additional credit for Law 51.450.

Prerequisite: Law 51.350★.

**Law 51.454★****Aboriginal Peoples and the Canadian Criminal Legal System**

Aboriginal peoples and the administration of Canadian criminal justice including policing, courts, corrections and aftercare. Content and effects of past and present policies, processes and laws. Alternatives such as self-government and self-determination; potential approaches to an appropriate justice system for Aboriginal peoples.

Precludes additional credit for Law 51.436★B (if taken in 1992-94).

Prerequisites: Law 51.204 and Fourth-year Honours standing.

Seminars three hours a week.

**Law 51.457★****Administrative Law and Control**

An examination of characteristics and selected problems of control of administrative action. Topics include: varieties of traditional and constitutional, legal and judicial control, impact of the Charter, reforms to administrative law control systems in Canada, and comparisons with developments outside Canada.

Also offered at the graduate level, with additional or different requirements, as Public Administration 50.537, for which additional credit is precluded.

Prerequisites: Law 51.205 or 51.305★ or 51.356★ or Public Administration 50.536.

Lectures three hours a week.

**Law 51.459****Internship in Law, Policy and Government**

A one-term, full-time work placement in a government department or governmental or non-governmental organization. Evaluation will be based on a written project report related to the work completed during the Internship and on an assessment from the employer.

Prerequisite: Fourth-year Honours standing; and registration in the Internship Option of the Concentration in Law, Policy and Government.

Internship 35 hours a week.



## Law 51.460 ★

**The Law of International Organizations**

Nature, character, legal status and jurisdiction of intergovernmental international organizations. Rights and duties of states arising from membership in international organizations. Distinction between international and supra-national institutions. United Nations system, selected subsidiary organs, and specialized agencies; non-governmental organizations at times of crisis.

Prerequisite: Law 51.363.

## Law 51.464 ★

**Legal Aspects of the International Protection of Human Rights**

The developing international law relating to the protection of human rights. General concepts, rules and institutions. Specific issues include self-determination, aboriginal rights, the refugee problem, and torture. The inherent problems and overall potential of international law.

Prerequisite: Law 51.353 or 51.359 ★ or 51.363 or 51.463.

Lectures three hours a week.

## Law 51.465 ★

**Contemporary Issues in Public International Law**

Topics vary from year to year and are announced in advance. May include transnational environmental issues; the international law of armed conflict, peacekeeping and neutrality; the law of international treaties and transnational agreements; state responsibility under international law.

Prerequisite: Law 51.363 (or, if Law 51.465 ★ is offered in the Winter term, concurrent registration in Law 51.363).

Seminars three hours a week.

## Law 51.467 ★

**Immigration and Refugee Law**

Immigrants and refugees; demographics; Canadian, international and human rights law and policy. The Canadian Immigration Act. Legal and social problems including entry and removal, family reunion, citizenship, remedies, the rights of clandestine migrants; settlement rights; non-discrimination; asylum; a nation's right to determine membership.

Prerequisite: Law 51.205.

Seminars three hours a week.

## Law 51.471 ★

**Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced well in advance of registration each year. This course is part of the Summer School in Criminal Justice and Social Policy and is offered by the Department of Law. (Also listed as Social Work 52.471 ★ and Sociology 53.471 ★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

## Law 51.472 ★

**Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced well in advance of registration each year. This course is part of the Summer School in Criminal Justice and Social Policy and is offered by the Department of Sociology and Anthropology. (Also listed as Social Work 52.472 ★ and Sociology 53.472 ★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

## Law 51.473 ★

**Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced well in advance of registration each year. This course is part of the Summer School in Criminal Justice and Social Policy and is offered by the School of Social Work. (Also listed as Social Work 52.473 ★ and Sociology 53.473 ★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

## Law 51.480 ★

**Environmental Regulation and Social Justice**

The potential of environmental law to protect the environment and people while promoting opportunities for informed participation in environmental decision making by groups traditionally excluded from these processes; contemporary issues of social justice raised by legal regulation of the environment.

Precludes additional credit for Law 51.494C ★ (if taken between 1995-96, and 1997-98.).

Prerequisite: Fourth-year Honours standing.

Seminars three hours a week.

## Law 51.481 ★

**Risk and the Legal Process**

Application of risk assessment and management in various legal arenas including insurance, liability and tort, litigation management, environmental protection, and sentencing and parole.

Precludes additional credit for Law 51.493C ★ (if taken in 1996-97 or 1997-98.).

Prerequisite: Fourth-year Honours standing.

Seminars three hours a week.

## Law 51.486 ★

**The Civilist Tradition**

Study of several European legal systems based on Roman law. Development of Roman law, including Justinians *corpus juris civilis*. Reception of Roman law by various European legal systems. Comparative analysis of selected articles of the French, Austrian and German codes.

Prerequisites: Law 51.100 (or its equivalent) and another Law course or a Classics course.

Lectures three hours a week.

## Law 51.487 ★

**Quebec Civil Law**

Quebec's legal system. Sources of law; their weight and importance. The Quebec Civil Code; force of Code provisions; division of the Code; influence of Roman law; techniques of interpretation. Study of selected Code articles. Interpretation and application of the Code in federal appeal courts.

Prerequisites: Law 51.100 (or its equivalent) and another Law course or Law 51.486 ★.

Lectures three hours a week.

## Law 51.490

**Directed Studies**

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only.

Prerequisites: Written acceptance by a faculty adviser and permission of the Department.

## Law 51.491 ★

**Tutorial in Law**

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Prerequisites: Written acceptance by a faculty member and permission of the Department.

## Law 51.492 ★

**Tutorial in Law**

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Prerequisites: Written acceptance by a faculty member and permission of the Department.

## Law 51.493 ★

**Advanced Legal Topics**

The topics of this course may vary from year to year, and are announced in advance of registration.

Prerequisite: Fourth-year Honours standing.

Law 51.494★

**Advanced Legal Topics**

The topics of this course may vary from year to year and are announced well in advance of the period of registration.

For 1998-99 the topic for Section B is *Family Conflict Resolution*. Interdisciplinary analysis of the emotional, social and legal aspects of family conflict as it occurs within intact, viable families; and from the breakdown of families. Family "circle" conferences,

parent-child contracts and innovative marriage contracts, mediation and the role of various professionals.

Prerequisite: Fourth-year Honours standing.

**Graduate Courses Open to Undergraduate Students**

Some graduate courses may also be open to interested Fourth-year students with permission of the Department.



# Law Enforcement Studies

## (Public Affairs and Management)

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Telephone: 520-2588  
Fax: 520-6654

### Academic Administration

Program Co-ordinator, K. Kelly

Management Committee Members, J.G. Bellamy  
• R.P. Saunders • B. Landry • A. Maslove • One student

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### General Information

This certificate program is designed for persons employed in the areas of law enforcement, national security or corrections, who wish to attend university courses. The program is offered in Day and Evening divisions. Candidates for the certificate are also encouraged to investigate undergraduate degree programs offered by the University. Courses taken for the certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require at least 9.0 further credits in addition to those required for the certificate. Persons who wish to complete a Bachelor of Arts degree after taking the certificate must complete at least 5.0 of the credits required for a Bachelor of Arts degree after the awarding of the certificate, at least 3.0 of which must be in the area of specialization of the new program.

### Admission Requirements

The basic admission requirement is the completion of the OSSD including six OACs, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations. (See p. 62.)

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits for the certificate, including all core courses, at Carleton University.

### Course Requirements

The following courses are required:

1. Law 51.204 (Introduction to Criminal Law in Context, prerequisite is C- or better in Law 51.100, or permission of the Department of Law);
2. Sociology 53.255★ (Sociology of Deviance, prerequisite C- or better in Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100) and 53.256★ (Police in Society);
3. Political Science 47.200 (Canadian Government and Politics, prerequisite is Political Science 47.100);

The candidate must, in addition, complete 3.0 credits, chosen in consultation with the Program Co-ordinator.

A candidate for the certificate must obtain a grade of C or better in at least one-half of the credits taken at Carleton University for the certificate.

Students are permitted eight attempts to complete the 6.0 credit program.

# Linguistics and Applied Language Studies

## (Arts and Social Sciences)

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Linguistics and Applied Language Studies Programs  
249 Paterson Hall  
Telephone: 520-2802

AIMESL Unit  
215 Paterson Hall  
Telephone: 520-6613

English as a Second Language Unit  
215 Paterson Hall  
Telephone: 520-6613

### Academic Administration

**Director**, Ian Pringle

**Assistant Director, Degree Programs**, Lynne Young

**Assistant Director, Language Teaching**, Trudy O'Brien

**Co-ordinator, English as a Second Language, Credit Programs**,  
Catherine MacNeil

**Co-ordinator, English as a Second Language, Intensive Programs**, Linda Librande

**Co-ordinator, Asian, Indigenous, Middle Eastern and Sign Language (AIMESL) Unit**, George Chouchani

**Co-ordinator, Language Testing Unit**, Janna Fox

**Co-ordinator, Writing Services**, Aviva Freedman

### Teaching Staff

**Professor Emeritus**

**William Cowan**, B.A. (*California*), Ph.D. (*Cornell*)

**Professors**

**Aviva K. Freedman**, B.A. (*McGill*), M.A. (*Columbia*), Ph.D. (*Montréal*) • **C. Stanley Jones**, B.S. (*Missouri Valley*), M.A. (*Washington at St. Louis*) • **Ian W.V. Pringle**, M.A. (*Auckland*) • **J. Rakusan**, M.Ling., Lit. Sci. (*Charles, Prague*), Ph.D. (*Ottawa*)  
• **Hans-George Ruprecht**, D. Phil. (*Saarbrücken*), Diplôme E.H.E.S.S. (*Paris*) • **Helmut Zobl**, B.A., M.A. (*Toronto*), Ph.D. (*Essen*)

**Associate Professors**

**Patricia Currie**, B.A. (*Queen's*), Ph.D. (*Lancaster*) • **Ann S. Laubstein**, B.A. (*Carleton*), M.A., Ph.D. (*Ottawa*) • **Peter G. Medway**, B.A., M.A. (*Oxford*), Ph.D. (*Leeds*) • **Devon H. Woods**, B.A. (*Carleton*), M.Sc. (*Edinburgh*), Ph.D. (*Utrecht*) • **Lynne Young**, B.A. (*Carleton*), M.A. (*York*), Ph.D. (*Leeuwen*)

**Assistant Professors**

**Eileen Cray**, B.A. (*Illinois, New College*), M.A. (*Wisconsin*) • **Richard Darville**, B.A. (*Kansas*), Ph.D. (*British Columbia*)

**Lecturer**

**Trudy O'Brien**, B.A., M.A. (*Carleton*)

**Instructors**

**George E. Chouchani**, B.A. (*American University, Cairo*) • **Renata K.T. de Pourbaix**, B.A. (*Trent*) • **Janna Fox**, B.A. (*Montana*), M.A. (*Carleton*) • **Catherine MacNeil**, B.A. (*Carleton*) • **Yoko Azuma Prikryl**, B.A. (*Keio*), M.Ed. (*Saskatchewan*) • **Emi Sakamoto-Jog**, B.A., M.L.S. (*McGill*)

**Adjunct Research Professors**

**C. Douglas Ellis** • **Kumiko Murasugi**

**Adjunct Professors**

**Keith Christopher** • **J. Yalden**

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## General Information

The School of Linguistics and Applied Language Studies offers a number of programs:

- B.A. (Honours) Programs (see p. 318)
- B.A. Programs (see p. 318)
- Certificate in the Teaching of English as a Second Language (CTESL) (see p. 319)
- Mention: français (for more information, see p. 319)
- Master of Arts in Applied Language Studies (see *Graduate Calendar*)

The School also includes a number of other units:

- English as a Second Language for Credit (see p. 323)
- AIMESL: Asian, Indigenous, Middle Eastern, and Sign Language Unit (see p. 324)
- Language Testing Unit
- Language Resource Unit
- Writing Tutorial Service

### B.A. (Honours) Programs

The Honours degree in Linguistics and Applied Language Studies allows students to develop their interest in General Linguistics or in Applied Language Studies.

### B.A. Programs

The B.A. program in Linguistics and Applied Language Studies allows students to acquire a general background in General Linguistics or in Applied Language Studies.

Both the B.A. (Honours) and B.A. programs offer a "Mention: français." In addition to Linguistics and Applied Language Studies 29.100 or First-Year Seminar 01.126, there is a group of courses dealing with general linguistics, concentrating on the descriptive and/or historical analysis of language; another group of courses deals with language and its connections to other human studies.

### Certificate in the Teaching of English as a Second Language (CTESL)

The Certificate in Teaching of English as a Second Language is a 5.0 credit program for those students who already have a degree or who have extensive experience in teaching, or are registered in an Honours undergraduate degree program at Carleton. The program includes both required courses and a range of complementary half-credit courses.

### English as a Second Language for Credit

English as a Second Language for Credit offers a number of credit courses for students whose native language is not English.

### AIMESL: Asian, Indigenous, Middle Eastern, and Sign Language Unit

The AIMESL Unit offers courses in a number of languages including: Japanese, Mandarin Chinese, Thai, Korean, Arabic, Indonesian/Malaysian, Hebrew, Vietnamese, Indigenous languages and American Sign Language. It also offers a course in English for Engineers as well as other specialized language-related courses.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements as set out below.

## Honours Programs

### Major in General Linguistics

This major focuses on general linguistics. The requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126;
2. 29.201★, 29.203★, 29.302★, 29.304★;
3. 1.0 credit in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;
4. 1.0 credit chosen from 29.401★, 29.402★ or 29.409★;
5. 1.5 additional credits at the 400-level;
6. 3.0 additional credits in Linguistics and Applied Language Studies, chosen in consultation with the School;
7. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the School.

For a Combined Honours program the requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126, 29.201★, 29.203★, 29.302★, 29.304★;
2. 1.0 credit from 29.401★, 29.402★ or 29.409★;
3. 2.0 additional credits in Linguistics and Applied Language Studies (including at least 0.5 credit at the 400-level);
4. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the School.

### Major in Applied Language Studies

This major focuses on applied language studies. The requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126;
2. 1.0 credit in general linguistics: 29.203★, and one of 29.201★, 29.302★, or 29.304★;
3. 2.0 credits in Applied Language Studies chosen from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;
4. 1.0 credit chosen from 29.421★, 29.427★, 29.441★, 29.442★, 29.462★, 29.481★;
5. 1.5 additional credits at the 400-level;
6. 3.0 additional credits in Linguistics and Applied Language Studies, chosen in consultation with the School;
7. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the School.

For a Combined Honours program the requirements are:

1. 29.100 or 01.126, 29.203★, and one of 29.201★, 29.302★, or 29.304★;
2. 4.0 additional credits in Linguistics and Applied Language Studies (including at least 1.5 credits at the 400-level);
3. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the School.

### B.A. Programs

#### Major in General Linguistics

This major focuses on general linguistics. The requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126;



2. 29.201★, 29.203★, 29.302★, 29.304★;

3. 1.0 credit in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;

4. 2.5 additional credits in Linguistics and Applied Language Studies, chosen in consultation with the School;

5. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the School.

For the B.A. Combined program the requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126;

2. 29.201★, 29.203★, 29.302★, 29.304★.

3. 0.5 credit in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★.

4. 0.5 additional credit in Linguistics and Applied Language Studies, chosen in consultation with the School.

### Major in Applied Language Studies

This major focuses on Applied Language Studies. The requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126;

2. 1.0 credit in general linguistics: 29.203★, and one of 29.201★, 29.302★, or 29.304★;

3. 2.0 credits in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;

4. 2.5 additional credits from courses in Linguistics and Applied Language Studies, chosen in consultation with the School;

5. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the School.

For the B.A. Combined program, the requirements are:

1. Linguistics and Applied Language Studies 29.100 or 01.126;

2. 1.0 credit in general linguistics: 29.203★, and one of 29.201★, 29.302★, or 29.304★;

3. 1.5 credits in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;

4. 0.5 additional credit from courses in Linguistics and Applied Language Studies, chosen in consultation with the School.

### Minor in Educational Linguistics

Students who are registered in degree programs other than Linguistics and Applied Language Studies may register for a Minor in Educational Linguistics. The Minor will be earned by completing 4.0 credits from the list below with a GPA of 6.5 or better:

4.0 credits, to be chosen from the following: 29.223★, 29.241★, 29.247, 29.263★, 29.264★, 29.271★, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.361★, 29.375★, 29.376★, 29.427★, 29.442★, 29.462★.

### Minor in Japanese Language

Students who are registered in degree programs may register for a Minor in Japanese Language. The Minor will be earned by completing 4.0 credits as specified below with a GPA of 6.5 or better: 23.120 (2.0 credits), 23.220, 23.320.

## Mention: français

Students in the B.A. (Honours) or B.A. program in Linguistics may qualify for the notation "Mention: français" (p. 83) by fulfilling the requirements outlined below. Those wishing to pursue this path should consult with the School's "Mention: français" adviser.

Linguistics courses presented in fulfilment of the "Mention: français" requirements can double as courses to satisfy Linguistics B.A. (Honours) or B.A. requirements.

Students enrolling in courses at the University of Ottawa will do so through the University of Ottawa Exchange Program. To enrol in courses in French at another university, students must obtain a Letter of Permission. (See articles 3.10 and 3.12, p. 75.)

*B.A. (Honours) and Combined B.A. (Honours) (4.0 credits)*

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French, for perfecting the students' command of French.

2. 1.0 credit linked to the study of the heritage and culture of French Canada taught in French at Carleton or the University of Ottawa. At Carleton: French 20.372★, 20.383★; At the University of Ottawa: FRA 3799, LIN 2505, LIN 3502, LIN 3503.

3. 1.0 credit in the area of linguistics taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, 1.0 credit chosen from French 20.380★, 20.381★, 20.382★, 20.480★, 20.481★, 20.482★, 20.483★, Linguistics and Applied Language Studies 29.397.

4. 1.0 credit at the 400-level in the area of linguistics taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, 1.0 credit chosen from French 20.480★, 20.481★, 20.482★, 20.483★ (if not taken during the Third year), Linguistics and Applied Language Studies 29.397.

The focus of the tutorials (Linguistics 29.397 and 29.497) may be on any of the following topics: American Indian languages, sociolinguistique, bilinguisme, dialectologie, développement de la langue maternelle pendant les années scolaires, problèmes du bilinguisme scolaire, pragmatique, grammaire du texte, sémiotique, sémantique. All written work must be submitted in French.

5. Combined Honours students must meet the "Mention: français" requirements of both Honours disciplines.

*B.A. (3 year) or Combined B.A. (3 year) Programs (3.0 credits)*

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French, for perfecting the students' command of French.

2. 1.0 credit linked to the study of the heritage and culture of French Canada taught in French at Carleton or the University of Ottawa. At Carleton: French 20.372★, 20.383★; At the University of Ottawa: FRA 3799, LIN 2505, LIN 3502, LIN 3503.

3. 1.0 credit in the area of linguistics taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, 1.0 credit chosen from French 20.380★, 20.381★, 20.382★, 20.480★, 20.481★, 20.482★, 20.483★, Linguistics and Applied Language Studies 29.397.

4. Combined B.A. program students must meet the "Mention: français" requirements of both disciplines.

## Certificate in the Teaching of English as a Second Language (CTESL)

To receive the Certificate in the Teaching of English as a Second Language, the requirements are:

1. Linguistics and Applied Language Studies 29.100 or First-Year Seminar 01.126; 29.425 and 29.426 taken concurrently; 29.462★; 29.481★.



**2. 1.0 credit chosen from:**

Linguistics 29.201★, 29.203★, 29.247, 29.271★, 29.273★, 29.274★, 29.361★, 29.375★, 29.376★, 29.421★, 29.427★, 29.482★, 29.496★

29.100 or 01.126 must be taken before or concurrently with all required courses.

A candidate for the Certificate must obtain a grade of C or better in all courses taken at Carleton University under the Certificate program. In addition, students in the CTESL program must be fluent in English, proficiency to be determined by an oral or written test given by the School.

**Admission Requirements**

1. Students may earn a Certificate as part of a B.A. (Honours) in Linguistics and Applied Language Studies, as part of a Combined B.A. (Honours) in Linguistics and Applied Language Studies and another discipline, or as part of an Honours degree in another discipline.

2. Students may also seek admission to the Certificate program after having completed a first degree in another discipline.

**Courses**

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in Linguistics and Applied Language Studies 01.123

**Introduction to Academic Language and Culture**

See course description p. 85.

First-Year Seminar in Linguistics and Applied Language Studies 01.124

**Language and Social Identity**

See course description p. 86.

First-Year Seminar in Linguistics and Applied Language Studies 01.125

**Language and Power**

See course description p. 86.

First-Year Seminar in Linguistics and Applied Language Studies 01.126

**Intensive Introductory Linguistics**

See course description p. 86.

Linguistics and Applied Language Studies 29.100

**Introduction to Linguistics**

Elementary principles and methods of descriptive analysis of language; phonetics; phonology; morphology; syntax. Survey of other areas of linguistics: historical linguistics, sociolinguistics, psycholinguistics, semantics, applied linguistics.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.185

**Academic Discourse and Culture**

Language as it is related to disciplinary enquiry. Language and culture of a variety of disciplines. Intended to enhance students' abilities to understand and acquire the culture, discourse, and conventions of their own disciplines.

Precludes additional credit for First-Year Seminar in Linguistics and Applied Language Studies 01.123.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.201★

**Phonetics**

Recognition, description, transcription and production of speech sounds; systems of transcription; the nature of the speech-producing mechanism; the acoustics of speech sounds. (Also listed as Anthropology 54.221★.)

Precludes additional credit for Linguistics and Applied Language Studies 29.301★.

Prerequisite: Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures three hours per week.

Linguistics and Applied Language Studies 29.203★

**Language Analysis**

Direction and practice in the analysis of grammatical material, including both morphology and syntax. Models for the description of grammatical regularities. Course work consists principally of practical exercises. (Also listed as Anthropology 54.223★.)

Precludes additional credit for Linguistics and Applied Language Studies 29.303★.

Prerequisite: Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.223★

**Linguistic Theory and Second-Language Learning**

A critical study of linguistic theory and description applied to second-language learning. Includes a brief consideration of similarities and differences in first- and second-language development, bilingualism and types of linguistic error and their significance.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.241★

**Language in Education**

Insights from linguistics and applied language studies into the development of English as mother tongue during elementary and/or secondary education. Language, learning and cognitive development.

Precludes additional credit for Linguistics and Applied Language Studies 29.295 and English 18.295.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.247

**Writing: Theory and Practice**

A study of the process of writing in theory and practice. Readings and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationships between thinking and writing; strategies for encouraging growth in writing. (Also listed as English 18.297.)

Precludes additional credit for Linguistics and Applied Language Studies 29.297.

Prerequisite: Second-year standing or enrolment in either the Certificate Program in English Language and Composition or the CTESL program.

Linguistics and Applied Language Studies 29.254★

**Language and Communication**

Some of the central topics in the study of language and communication as pursued by linguists and philosophers. Topics include: the nature of meaning; the connections between language, communication and cognition; language as a social activity. (Also listed as Philosophy 32.254★ and Mass Communication 27.254★.)

Precludes additional credit for Linguistics and Applied Language Studies 29.280 (27.280; 32.280).

Prerequisite: Second-year standing.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.263★

**Child Language**

This course will look at the milestones associated with the development of grammatical, pragmatic and metalinguistic competence from birth to about age ten, and at the relative contributions of the environment, cognitive development and inborn knowledge to this development.

Prerequisite: Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures three hours per week.

Linguistics and Applied Language Studies 29.264★

**Speech and Language Problems**

An examination of the congenital, developmental and acquired disorders of language, speech and voice; prevalences, types,



causes and effects; related research.  
Lectures three hours a week.

**Linguistics and Applied Language Studies 29.271 ★**

**Sociolinguistics**

The place of language within society; bilingual and multilingual communities; language, social mobility and social stratification; sociolinguistic factors in language change.  
Lectures three hours a week.

**Linguistics and Applied Language Studies 29.273 ★**

**Gender and Language**

A course that considers the influence of gender on language and the way in which language reflects society's view of gender. Topics covered include: gender differences in language use and in discourse, gender-bias in language, and the role of language in socializing for gender.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.274 ★**

**Bilingualism**

The linguistic nature of bilingualism. The structure of bilingual societies and the relation between societal and individual bilingualism. The role of bilingualism in language education.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.275 ★**

**Language, Ideology and Power**

How social conditions engender different linguistic choices. Attention to linguistic resources for expressing ideological beliefs and for maintaining and reinforcing power structures in institutional and social sites. (Also listed as Sociology/Anthropology 56.215★.)

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.276 ★**

**Conversational Analysis**

Methods and theory for analysing ordinary talk. Differences between language in conversation and formal spoken and written language. The relation of conversational analysis to other approaches to studying language. The connection between conversational analysis and studies of interaction. (Also listed as Sociology/Anthropology 56.216★.)

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.302 ★**

**Phonology**

The sound-systems of languages; methods for the analysis and description of phonological structure. The course concentrates on generative theory with comparisons to other theories. (Also listed as Anthropology 54.302★.)

Prerequisite: Linguistics and Applied Language Studies 29.201★.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.304 ★**

**Grammatical Theory**

Comparison of major current schools of linguistics. Theories of grammatical structure. The testing of grammatical hypotheses. Grammatical structure and meaning. Course work consists principally of lectures and readings. (Also listed as Anthropology 54.304★.)

Prerequisite: Linguistics and Applied Language Studies 29.203★.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.311 ★**

**Historical Linguistics**

Principles and methods of the historical analysis of languages; the comparative method; internal reconstruction; sound change; rule change; the philological method; problems in historical analysis.

Precludes additional credit for Linguistics 29.211★.

Prerequisite: Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.341 ★**

**Language and Work**

Written and spoken language of the workplace. How people participate through language in generating ideas, solving problems, carrying out tasks and creating, maintaining, modifying and subverting social relations in workplace contexts. Students collect and analyse examples of workplace discourse.

Precludes additional credit for Linguistics 29.392★ (if taken in 1994-95).

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.354 ★**

**Pragmatics**

The theoretical study of language use as pursued by linguists and philosophers. Topics include: conversational implicature; deixis; the semantics-pragmatics boundary; speaker's reference; speech acts. (Also listed as Mass Communication 27.354★ and Philosophy 32.354★.)

Precludes additional credit for Linguistics and Applied Language Studies 29.280, (27.280, 32.280)

Prerequisite: Second-year standing or at least 0.5 credit in Philosophy or Linguistics and Applied Language Studies.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.356 ★**

**Semantics**

Perspectives on the semantic structure of language. The study of meaning, with special emphasis on lexical and grammatical issues - including sentence and text meaning, as well as issues about reference. (Also listed as Philosophy 32.356★.)

Precludes additional credit for Linguistics and Applied Language Studies 29.232★ and Philosophy 32.232★.

Prerequisite: Linguistics and Applied Language Studies 29.203★, Mass Communication 27.254★, Linguistics and Applied Language Studies 29.254★, Philosophy 32.254★, or Philosophy 32.201★.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.361 ★**

**Psycholinguistics**

Language performance and language use; the production and perception of language; psychological processes involved in speech performance; the relevance of these questions to linguistic theory.

Precludes additional credit for Linguistics and Applied Language Studies 29.261★.

Prerequisite: Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.375 ★**

**Adult Literacy**

The extent and social contexts of restricted literacy in Canadian society; approaches to and debates surrounding the teaching and learning of adult literacy.

Precludes additional credit for Linguistics 29.496★ (if taken in 1994-95 or 1995-96).

Prerequisite: Third-year standing in Linguistics and Applied Language Studies or enrolment in the CTESL program.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.376 ★**

**Discourse Analysis**

Principles of and studies in discourse analysis, including both conversational and textual/documentary analysis. The major focus is on language use in structuring social relationships.

Precludes additional credit for Linguistics 29.423★

Prerequisite: Third-year standing in Linguistics and Applied Language Studies or enrolment in the CTESL program.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.390**

**Independent Study**

Research under the supervision of a member of the School. Normally available only to Third- and Fourth-year students in Linguistics and Applied Language Studies.

Prerequisite: Permission of the School.



Linguistics and Applied Language Studies 29.391 ★

**Independent Study**

Research under the supervision of a member of the School. Normally available only to Third- and Fourth-year students in Linguistics and Applied Language Studies.

Prerequisite: Permission of the School.

Linguistics and Applied Language Studies 29.393 ★

**Special Topics in Linguistics and Applied Language Studies**

Selected topics in Linguistics and Applied Language Studies not ordinarily treated in the regular course program. Contents of this course vary from year to year.

Prerequisite: Linguistics and Applied Language Studies 29.100 or 01.126, or permission of the School.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.397

**Études dirigées**

Lectures ou recherche et travaux écrits dirigés par un membre du département. Les projets de recherche peuvent être organisés soit comme *tutorial* pour un(e) seul(e) étudiant(e) soit comme séminaire pour un groupe d'étudiants.

For Third-year Linguistics and Applied Language Studies students of "Mention: français" only.

Prerequisite: Permission of the School.

Linguistics and Applied Language Studies 29.401 ★

**Advanced Phonology**

A continuation of Linguistics and Applied Language Studies 29.302 ★. Among topics covered: the methodological problems of phonology, the problems of markedness and natural rules, ordering, abstractness, and other current theoretical developments.

Prerequisite: Linguistics and Applied Language Studies 29.302 ★ or permission of the School.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.402 ★

**Advanced Grammar**

A continuation of Linguistics and Applied Language Studies 29.304 ★. Among topics covered: global rules, clause movement, constraints, trace theory and other current developments in syntactic analysis.

Prerequisite: Linguistics and Applied Language Studies 29.304 ★ or permission of the School.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.403 ★

**Philosophy of Language**

(Also listed as Philosophy 32.401 ★).

Prerequisite: Fourth-year Honours standing in Linguistics and Applied Language Studies or Philosophy or permission of either the School or the Department of Philosophy.

Linguistics and Applied Language Studies 29.409 ★

**Topics in General Linguistics**

A course devoted to an examination of a topic or more specialized area in linguistics or language study. This course may be taken more than once.

Prerequisite: Third- or Fourth-year standing in Linguistics and Applied Language Studies or permission of the School.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.421 ★

**Language Testing**

The principles of test construction as applied to testing language proficiency, achievement and aptitude. Structural, notional, discrete point and integrative tests are covered. Students are expected to create, analyse and evaluate language tests.

Prerequisite: Third-year standing in Linguistics and Applied Language Studies, or enrolment in the CTESL program.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.425

**Teaching English as a Second Language: Methodology**

Classification of classroom teaching methods and materials; adaptation of teaching materials for particular situations; creation of teaching materials; teaching techniques and strategies.

Prerequisite: Third-year standing in Linguistics and Applied Lan-

guage Studies, or enrolment in the CTESL program.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.426

**Practicum in Teaching English as a Second Language: Experience in an ESL Teaching Situation**

Integrates the academic dimension of the program with practical work. Observation in ESL classes and possible assistance with teaching materials or classes. Graded *Sat* or *Uns* and normally taken concurrently with Linguistics and Applied Language Studies 29.425.

Prerequisites: Third-year standing in Linguistics and Applied Language Studies, or enrolment in the CTESL program.

Linguistics and Applied Language Studies 29.427 ★

**ESL Literacy**

The nature of everyday literacy and literacy skills. Analyzing the structure of everyday literacy texts and demands. Issues in literacy for second-language learners.

Prerequisite: Third-year standing in Linguistics and Applied Language Studies, or enrolment in the CTESL program.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.441 ★

**Rhetoric and Argument in the Human, Social and Natural Sciences**

How rhetorical considerations shape the construction of arguments within disciplinary communities. How disciplinary and socio-historical conditions shape scientific communities' criteria for what will be accepted as persuasive. Reflexive work analysing students' own fields of inquiry. Also offered at the graduate level, with additional or different requirements, as Applied Language Studies 29.541 for which additional credit is precluded.

Precludes additional credit for Linguistics and Applied Language Studies 29.495 and English 18.495.

Prerequisite: Third-year standing.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.442 ★

**Learning Across the Disciplines: A Research Practicum**

Theory about and research into the role of language in learning and pedagogic situations which optimize that relationship. Students perform teacher-research related to their teaching, within the context of the theory presented. Also offered at the graduate level, with additional or different requirements, as Applied Language Studies 29.542 for which additional credit is precluded.

Prerequisite: Third-year standing.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.462 ★

**Second-Language Acquisition**

Current models of second-language acquisition and learning with an emphasis on empirical studies. Universals of second-language acquisition.

Prerequisite: Third-year standing in Linguistics and Applied Language Studies, or enrolment in the CTESL program.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.481 ★

**Major Structures of English**

This course is intended to familiarize students with the structure of the English language, highlighting important contrasts between English and other languages as well as grammatical difficulties for ESL learners.

Precludes additional credit for Linguistics and Applied Language Studies 29.485.

Prerequisites: Enrolment in the CTESL program or Fourth-year standing and Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures three hours a week.

Linguistics and Applied Language Studies 29.482 ★

**Language Contact and Language Spread**

This course will consider the development and spread of creoles and pidgins, introduce principles of language policy and planning, and analyze the emergence of New Englishes.

Precludes additional credit for Linguistics and Applied Language Studies 29.485.



**Prerequisites:** Enrolment in the CTESL program or Fourth-year standing and Linguistics and Applied Language Studies 29.100 or 01.126.

Lectures and discussion three hours a week.

**Linguistics and Applied Language Studies 29.490**

#### **Tutorial in Linguistics**

Permits Fourth-year Honours students to pursue their interests in a selected area of linguistics and applied language studies.

**Prerequisite:** Permission of the School.

**Linguistics and Applied Language Studies 29.491 ★**

#### **Tutorial in Linguistics**

Permits Fourth-year Honours students to pursue their interests in a selected area of linguistics and applied language studies.

**Prerequisite:** Permission of the School.

**Linguistics and Applied Language Studies 29.496 ★**

#### **Selected Topics in Applied Language Studies**

Selected topics in applied language studies. Contents of this course vary from year to year.

**Prerequisite:** Third- or Fourth-year standing or enrolment in the CTESL program.

Lectures three hours a week.

**Linguistics and Applied Language Studies 29.497**

#### **Études dirigées**

Études spécialisées en linguistique. Préparation d'un travail écrit ou d'une mémoire sur un sujet choisi par l'étudiant(e) en collaboration avec le directeur du *tutorial* et approuvé par le l'école.

For Fourth-year Linguistics and Applied Language Studies students of "Mention: français" only.

**Prerequisite:** Permission of the School.

**Linguistics and Applied Language Studies 29.499**

#### **Honours Essay**

Subject selected in consultation with the department and carried out under the direction of a faculty supervisor. Scheduled tutorials with supervisor are required.

**Prerequisites:** Fourth-year standing in Linguistics and Applied Language Studies, a GPA of 9.0 or better, and permission of the School.

Tutorial hours arranged.

## **English as a Second Language Unit**

### **General Information**

The Credit and Non-Credit English as a Second Language (ESL) Units offer a number of types of courses for students for whom English is not the native language, including credit courses, and non-credit courses. The non-credit courses are offered on a full-time basis (as the Intensive Courses) or on a part-time basis (individual courses related to specific language needs). In addition, the ESL Units develop and carry out specialized courses for client groups based on their academic or professional needs including the non-credit Diploma in English as a Foreign Language; English Language and Methods for International Teachers, and the non-credit Diploma in English for Business Communication.

The ESL Units also engage in research activities related to analysis of students' language needs, development of methodologies and materials for teaching, and development of methodologies and materials for self-directed learning, and assessment of language activities through testing.

### **Credit Course Information**

The courses are designed to meet the needs of students who are qualified for admission to any faculty but whose native language is not English, and whose scores on the Carleton Academic English Language (CAEL) Assessment or other tests recognized by the University indicate they would encounter serious difficulties in a

full academic program. No student who has native or native-like command of English is permitted to take any of these courses.

The aim of these courses is to train students for university work. E.S.L. 21.130 is specifically for Canadian residents and citizens who have had little or no previous experience with academic English. The focus for the Intermediate English (E.S.L. 21.150) and Advanced English (E.S.L. 21.190) is on listening to lectures and extended discourse, note-taking, writing essays and papers and participating in group seminar work. E.S.L. 21.195 is a similar course but is concerned specifically to address the needs of students in the Faculty of Engineering. The focus in Advanced Writing (E.S.L. 21.196★) is specifically related to developing skill in preparing, writing, revising and editing papers and reports for academic and professional purposes.

Placement in these courses is determined by the Carleton Academic English Language (CAEL) Assessment. No challenges for credit can be made for credit in E.S.L. The number of E.S.L. credits that may count toward a degree varies by faculty: a maximum of 1.0 credit (at the advanced level only) may count toward a student's degree in Engineering; a maximum of 2.0 credits may count toward a degree in the Faculties of Public Affairs and Management and Arts and Social Sciences; a maximum of 3.0 credits may count toward a degree in the Faculty of Science and the School of Computer Science.

### **Courses**

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

**Linguistics and Applied Language Studies 21.130**

#### **Introductory English as a Second Language for Academic Purposes**

Skills and strategies in ESL for students with little or no experience with academic English. General proficiency development. Integrated language skills and strategies for academic success at university.

**Prerequisite:** Placement by the Carleton Academic English Language Assessment.

Not open to visa students.

Nine hours a week (one term).

**Linguistics and Applied Language Studies 21.150**

#### **Intermediate English as a Second Language for Academic Purposes**

Skills and strategies in ESL for students with basic grammatical and oral competence but limited experience with academic English. Focus on reading, listening and writing. Introduction to research skills.

**Prerequisite:** Linguistics and Applied Language Studies 21.130 or placement by the Carleton Academic English Language Assessment.

Six hours a week (one term).

**Linguistics and Applied Language Studies 21.190**

#### **Advanced English as a Second Language for Academic Purposes**

Development of research and analytic skills, primarily through reading and writing of academically-oriented texts.

**Prerequisite:** Grade of C or better in Linguistics and Applied Language Studies 21.150 or placement by the Carleton Academic English Language Assessment.

Six hours a week (one term).

**Linguistics and Applied Language Studies 21.195**

#### **Advanced English as a Second Language for Engineering Students**

Development of technical communication skills specific to Engineering and Industrial Design: reports, design projects, oral presentations.

**Prerequisite:** Grade of C or better in Linguistics and Applied Language Studies 21.150 or placement by the Carleton Academic English Language Assessment.

Three hours a week (two terms).



Linguistics and Applied Language Studies 21.196★  
**Advanced Writing for English as a Second Language**  
 Strategies for writing academic papers and professional text.  
 Three hours a week (one term).

## AIMESL - Asian, Indigenous, Middle Eastern and Sign Language

### General Information

In addition to E.S.L. courses, the School of Linguistics and Applied Language Studies assumes the responsibility for teaching the University's credit courses in Mandarin Chinese, Thai, Japanese, Korean, Arabic, Indonesian/Malaysian, Hebrew, Vietnamese, Indigenous languages and American Sign Language. Some of these are intensive courses, requiring eight hours of class-time per week in addition to regular laboratory and other out-of-class assignments.

The Unit also includes a course that addresses the discipline specific communication needs of Engineering students.

### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Linguistics and Applied Language Studies 23.100★  
**Communication Skills for Engineering Students**  
 Development of students' competence in written and oral communication in engineering. Focus on professional written documents (process descriptions, proposals, reports, engineering literature reviews and responses); written responses to engineering communications; related oral work.  
 Precludes additional credit and weight for Engineering 91.200.  
 Lectures three hours a week.

Linguistics and Applied Language Studies 23.110  
**Intensive Introductory Mandarin (2.0 credits)**  
 For students with little or no knowledge of Mandarin. Oral skills; basic reading and writing skills. Placement test for non-literate speakers of other Chinese language.  
 Not open to students already literate in any Chinese language.  
 Eight hours a week.

Linguistics and Applied Language Studies 23.115  
**Intensive Introductory Thai (2.0 credits)**  
 For students with little or no knowledge of Thai. Oral skills; basic reading and writing skills.  
 Eight hours a week.

Linguistics and Applied Language Studies 23.120  
**Intensive Introductory Japanese (2.0 credits)**  
 For students with no knowledge of Japanese. Oral skills; basic reading and writing skills.  
 Precludes additional credit for Linguistics and Applied Language Studies 23.121.  
 Eight hours a week.

Linguistics and Applied Language Studies 23.121  
**Low Intermediate Japanese**  
 Continuation of the study of Japanese to reach by the end of the course a level of proficiency comparable to that of students who complete Linguistics and Applied Language Studies 23.120. All skills; emphasis on the development of reading and writing.  
 Precludes additional credit for Linguistics and Applied Language Studies 23.120.  
 Prerequisites: At least one year of high school Japanese, or equivalent ability.  
 Eight hours a week (one term).

Linguistics and Applied Language Studies 23.220  
**Intermediate Japanese**  
 Continuation of the study of Japanese to reach a more advanced level of ability in a range of situations. Equal emphasis on oral and written language.  
 Prerequisite: Linguistics and Applied Language Studies 23.120 or equivalent, or a minimum of two years of Japanese as a second language at secondary school. Students must have an ability to read and write both hiragana and katakana and have some knowledge of kanji characters.  
 Three hours a week.

Linguistics and Applied Language Studies 23.320  
**Advanced Japanese**  
 Continuation of the study of Japanese to reach a more advanced level, including ability to handle authentic materials and also primary texts required for academic studies.  
 Prerequisite: Linguistics and Applied Language Studies 23.220 or equivalent.  
 Three hours a week.

Linguistics and Applied Language Studies 23.125  
**Intensive Introductory Korean (2.0 credits)**  
 For students with no knowledge of Korean. Oral skills; basic reading and writing and skills.  
 Eight hours a week.

Linguistics and Applied Language Studies 23.126  
**Low Intermediate Korean**  
 Continuation of the study of Korean to reach by the end of the year a comparable level of proficiency to students who complete Linguistics and Applied Language Studies 23.125. All skills; emphasis on the development of reading and writing.  
 Prerequisite: At least one year of high school Korean, or equivalent ability.  
 Four hours a week in two terms, or eight hours a week in one term.

Linguistics and Applied Language Studies 23.225  
**Intermediate Korean**  
 Continuation of the study of Korean to reach a more advanced level of ability in a range of situations. Equal emphasis on oral and written language.  
 Prerequisite: Linguistics and Applied Language Studies 23.125 or 23.126 or equivalent, or a minimum of two years of Korean as a second language at high school. Students must have an ability to read and write Han-gul.  
 Three hours a week.

Linguistics and Applied Language Studies 23.325  
**Advanced Korean**  
 Continuation of the study of Korean to reach a more advanced level including ability to handle authentic materials such and also primary texts required for academic studies.  
 Prerequisite: Linguistics and Applied Language Studies 23.225 or equivalent.  
 Three hours a week.

Linguistics and Applied Language Studies 23.130  
**Intensive Introductory Arabic (2.0 credits)**  
 For students with little or no knowledge of Arabic. Intermediate spoken proficiency in one dialect of Modern Standard Arabic. Writing and composition.  
 Eight hours a week.

Linguistics and Applied Language Studies 23.140  
**Introduction to Indonesian/Malaysian**  
 Speaking and listening; basic syntax and morphology. Not open to native speakers of Indonesian/Malaysian.  
 Four hours a week.

Linguistics and Applied Language Studies 23.150  
**Modern Spoken Hebrew (2.0 credits)**  
 An intensive introduction to Modern Hebrew, with emphasis on speaking and listening.  
 Eight hours a week.

Linguistics and Applied Language Studies 23.160

**Vietnamese Language and Culture**

Advanced spoken and written Vietnamese. Selected readings from prose, including literature in Vietnamese in the modern period (1930-1975) and from the literature of the diaspora (since 1975).

Prerequisite: Grade 12 credit in Vietnamese, or equivalent ability.  
Four hours a week.

Linguistics and Applied Language Studies 23.190

**Introductory Study of an Indigenous Language**

An introduction to the study of an indigenous language. Language for 1998-99: Ojibwe.

Four hours a week.

Linguistics and Applied Language Studies 23.191

**Introduction to American Sign Language**

For students with little or no knowledge of the language or culture of deaf people. Basic communicative competence in American Sign Language. Anthropological, sociolinguistic, and sociocultural aspects of deaf culture.

Three hours a week.

Linguistics and Applied Language Studies 23.195

**Intensive Introductory Study of an Indigenous Language (2.0 credits)**

An intensive introduction to the study of an indigenous language. Eight hours a week.

## Language Testing Unit

215 Paterson Hall

Telephone: 520-6612

Testing Co-ordinator: Janna Fox

For students who are admitted to Carleton with an English language requirement (see p. 32), or for non-native speakers of English who wish to take courses in English as a Second Language, the Language Testing Unit of the School of Linguistics and Applied Language Studies prepares and administers the Carleton Aca-

demic English Language (CAEL) Assessment and other placement and proficiency tests in English as a Second Language. The Language Testing Unit also conducts research and development activities in language testing, and offers a consultancy service on language testing both within the University and outside.

## Language Resource Unit

The Language Resource Unit houses the language laboratory and the language-laboratory-by-telephone system. It holds audio, video and print materials for language learning. It has facilities for specialized courses in many foreign languages which can meet special language requirements of particular groups.

## Writing Tutorial Service

The Writing Tutorial Service offers a flexible and multi-faceted approach to the teaching of writing at the University. The program consists of individualized tutorials, supplementary workshops on style, minicourses on the principles of academic writing in general, and seminars on the finer points of discipline-specific writing (such as the writing of law essays and examinations). In addition, the service is regularly called on to deal with special writing problems arising in specific courses or disciplines by designing individual ancillary programs in response to, and in consultation with, the instructors in those disciplines. The service also sponsors and conducts research on the acquisition, development, and improvement of writing abilities in the university context.

## Carleton University Writing Consultants

Carleton University Writing Consultants is an extension of the Writing Tutorial Service that provides teams of consultants to diagnose writing problems in the workplace, analyze patterns of written communication in the workplace, and provide appropriate in-house writing instruction, usually on an individualized tutorial basis.



# Mass Communication

## (Public Affairs and Management)

310 St. Patrick's Building  
Telephone: 520-7408  
Fax: 520-6690

### Academic Administration

Associate Director, School of Journalism and Communication, Paul Attallah

Supervisor of Graduate Studies, Vincent Mosco

### Bachelor of Arts in Mass Communication

The School of Journalism and Communication offers B.A. (Honours) and B.A. undergraduate programs in Mass Communication. (See p. 301.) Candidates for the Honours program are required to take a minimum of 20.0 credits and those in the B.A. program a minimum of 15.0 credits. The Mass Communication programs are provided for students with broad interests in mass communication in contemporary society who do not intend to pursue careers as professional journalists. The Honours degree is designed for students who intend to do graduate work in communication or a related field.

### Graduate Program

The School of Journalism and Communication offers studies leading to the degrees of Master of Arts and Ph.D. in Communication. For further details consult the *Graduate Studies and Research Calendar*.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to all regulations and requirements of the School of Journalism and Communication as set out below.

### Admission and Continuation Requirements

Admission and continuation requirements in the two programs are those set by the Faculty of Public Affairs and Management. Admission to Second year will be guaranteed only to students who complete 5.0 credits in First year, achieve a grade of B- or better in Mass Communication 27.111 or 01.127 and also achieve a CI of 7.00. The CI is calculated by dividing the total grade points accumulated over all attempts by the total number of attempts. The calculation is carried to two decimal places without rounding. For further information on calculation of the CI, see p. 80.

The School also maintains a number of places in Second year for students who wish to transfer from Carleton University or elsewhere. These spaces are limited and it may not be possible to grant admission to all applicants. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success. Normally, offers are made to students with an overall GPA of 10.0 or better.

### Honours Program

A candidate for a B.A. (Honours) in Mass Communication requires 9.0 credits in Mass Communication. The requirements are:

1. Mass Communication 27.111 or 01.127, 27.201, 27.211, 27.311;

2. 2.0 credits chosen from Mass Communication 27.251★, 27.254★, 27.290, 27.305★, 27.306★, 27.342★, 27.343★, 27.346★, 27.348★, 27.352★, 27.354★, 27.355★, 27.357★;

3. 3.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.420★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497;

4. 11.0 elective credits.

Recommended sequence for B.A. (Honours) in Mass Communication

#### First Year

Mass Communication 27.111 or 01.127;  
4.0 elective credits.

#### Second Year

Mass Communication 27.201, 27.211;  
3.0 elective credits.

#### Third Year

Mass Communication 27.311;  
2.0 credits chosen from Mass Communication 27.251★, 27.254★, 27.290, 27.305★, 27.306★, 27.342★, 27.343★, 27.346★, 27.348★, 27.352★, 27.354★, 27.355★, 27.357★;  
2.0 elective credits.

#### Fourth Year

3.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.420★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497;  
2.0 elective credits.

### Combined Honours

Students taking Combined B.A. (Honours) in Mass Communication and another discipline are required to take the following credits:

1. Mass Communication 27.111 or 01.127, 27.201, 27.211, 27.311;
2. 1.0 additional credit at the 200- or 300-level in Mass Communication;
3. 2.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.420★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497.

### Combined Honours in Journalism and Mass Communication

Course requirements are:

1. Mass Communication 27.201, 27.211, 27.311, and 2.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.420★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497;

2. 1.0 French language credit. Acceptable 100-level French courses are any of French 20.107, 01.108, 01.117, 20.145, and 20.160;

3. 1.0 approved credit in Canadian history. (Students who expect to practise journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);

4. Approved options to make up a program total of 20.0 credits (20.5 credits if admitted prior to 1995-96).

## B.A. Program

The requirements for a B.A. program in Mass Communication include 6.0 credits in Mass Communication:

1. Mass Communication 27.111 or 01.127, 27.201, 27.211, 27.311;
2. 2.0 credits chosen from Mass Communication 27.251★, 27.254★, 27.290, 27.305★, 27.306★, 27.342★, 27.343★, 27.346★, 27.348★, 27.352★, 27.354★, 27.355★, 27.357★;
3. 9.0 elective credits.

## Minor in Mass Communication

Students majoring in another discipline in the B.A. degree or the B.A. (Honours), may take a Minor in Mass Communication. 4.0 credits are required:

1. Mass Communication 27.111 or First-Year Seminar 01.127;
2. 27.211 and 27.311;
3. 1.0 additional credit in Mass Communication at the 200- or 300-level

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First Year Seminar in Mass Communication 01.127

### Introduction to Mass Communication

See course description on p. 86.

Mass Communication 27.111

### Introduction to Mass Communication

Examines major reasons for the emergence of communication studies in the 20th century. Emphasis on history and structure of mass media, their relationship to social and cultural change, and basic issues of communication and cultural policy. Lectures and discussion groups three hours a week.

Precludes additional credit for First-Year Seminar 01.127.

Mass Communication 27.201

### Media Research

Introduction to quantitative and qualitative methods of media research: statistical and computer analysis, field research, policy and document analysis, historical/archival research.

Prerequisites: Mass Communication 27.111, First-Year Seminar 01.127 or Journalism 28.100 as well as B.A. (Honours) or B.A. standing in Mass Communication or permission of the School.

Lecture two hours a week, laboratory one hour a week.

Mass Communication 27.211

### The Mass Media in Modern Society

Examination of the historical development and current operations of diverse mass media in relation to the larger social structure, with emphasis on Canadian society.

Prerequisites: Mass Communication 27.111 or First-Year Seminar 01.127. Open to declared Majors in Mass Communication or by permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.251★

### Communications Law I

A survey of laws that affect the Canadian media. Specific areas include the development of freedom of expression, the Charter of Rights and Freedoms, and statutory and common law limitations on freedoms of the press, including publication bans, libel and contempt of court. (Also listed as Journalism 28.251★.)

Precludes additional credit for Mass Communication 27.351★, Journalism 28.351★ or Law 51.351★.

Prerequisite: Mass Communication 27.111, or 01.127, or Journalism 28.100 or permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.254★

### Language and Communication

Some of the central topics in the study of language and communication as pursued by linguists and philosophers. Topics include: the nature of meaning; the connections between language, communication and cognition; language as a social activity. (Also listed as Linguistics and Applied Language Studies 29.254★ and Philosophy 32.254★.)

Precludes additional credit for Linguistics 29.280, Mass Communication 27.280 and Philosophy 32.280.

Prerequisite: Second-year standing.

Lectures three hours a week.

Mass Communication 27.290

### Truth and Propaganda

Ancient and modern techniques of persuasion from analytical, ethical and jurisprudential perspectives. Objectivity and bias, advertising and public relations ethics, the viability of democracy in the light of pressures on and within the modern mass media. (Also listed as Philosophy 32.290.)

Prerequisite: At least 0.5 credit in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Mass Communication 27.305★

### International Media Systems

Examination of the flow of global communication and information and their impact on our views of the world. Attention to the relationship between Canadian media and regional and international media institutions and systems. (Also listed as Journalism 28.305★.)

Prerequisite: Mass Communication 27.211 as well as Honours or B.A. standing in Mass Communication, or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Mass Communication 27.306★

### Comparative Media Studies

The comparative study of one or more of media content, effects, organization, operation, and criticism, and related theoretical perspectives. (Also listed as Journalism 28.306★.)

Prerequisite: Mass Communication 27.211 as well as Honours or B.A. standing in Mass Communication, or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Mass Communication 27.311

### Advanced Study of the Mass Media

An examination of the philosophical and theoretical foundations of mass communication studies. The course is an analysis of the content of selected theories with a view to assessing the contributions they make to the understanding of mass communication.

Prerequisites: Mass Communication 27.211 and Honours or B.A. standing in Mass Communication or permission of the School.

Lecture and discussion groups three hours a week.

Mass Communication 27.342★

### On Television

This course examines the television medium as it was formed historically, both as a social institution and as a technological form. Various methods by which television texts might be analysed are presented, and different genres are compared and discussed.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lectures and discussion three hours a week.



**Mass Communication 27.343★**

**Communication Technology and Culture**

An examination of the relationship between communication technology and society. The course examines the factors that contribute to changes in the collection, storage and distribution of information and their cultural implications.

Prerequisite: Mass Communication 27.211 or permission of the School.

Seminar three hours a week.

**Mass Communication 27.346★**

**Media Construction and Social Issues**

A study of the industrial-bureaucratic structures of the news media and their relevance to the reporting of social and political issues; an examination of the dominant discourses on these issues and their relevance for the organization of newswork. The issues vary from year to year.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lectures and discussion three hours a week.

**Mass Communication 27.348★**

**Advertising: A Critical Perspective**

This course explores and critically analyzes some of the major constructs and basic mechanisms of the advertising system. This will include an examination of the social, political-economic and cultural implications of advertising.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lecture three hours a week.

**Mass Communication 27.352★**

**Telecommunications Regulation**

The law regulating Canadian broadcasting and communications industries. Focus on the Canadian Radio-Television and Telecommunications Commission. Topics may include: administrative formulation of policy, ownership rules, program content and quality, access to the media, cablevision licensing and control, alternative sanctions. (Also listed as Journalism 28.352★ and Law 51.352★.)

Prerequisite: One of Law 51.203, 51.204 or 51.205, or a 200-level Journalism or Mass Communication credit.

Lectures and discussion three hours a week.

**Mass Communication 27.354★**

**Pragmatics**

The theoretical study of language use as pursued by linguists and philosophers. Topics include: conversational implicature; deixis; the semantics-pragmatics boundary; speaker's reference; speech acts. (Also listed as Linguistics and Applied Language Studies 29.354★ and Philosophy 32.354★.)

Precludes additional credit for Mass Communication 27.280, Linguistics 29.280 and Philosophy 32.280.

Prerequisite: Second-year standing or at least 0.5 credits in Philosophy or Linguistics and Applied Language Studies.

Lectures and discussion three hours a week.

**Mass Communication 27.355★**

**Media and Gender**

Examination of the role of mass media in shaping our conceptions of gender roles. Evaluation of the social, political and cultural consequences of such conceptions.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lectures and discussion three hours a week.

**Mass Communication 27.357★**

**Special Topic**

An examination of a special topic in mass communication not covered in depth in other courses. The topic varies from year to year. Possible topics include: communications policy analysis; the political economy of the mass media; and the social impact of new communications technology.

Prerequisite: Mass Communication 27.211 or permission of the School.

**Mass Communication 27.400★**

**Advanced Media Research: Quantitative Methods**

Methodological issues and statistical techniques for investigating theoretical questions concerning mass communication and society. Content varies yearly, but focus is on advanced statistical methods.

Precludes additional credit for Mass Communication 27.401

Prerequisites: Mass Communication 27.201, 27.311 and Honours standing in Mass Communication or permission of the School.

**Mass Communication 27.402★**

**Advanced Media Research: Qualitative Methods**

Methodological issues appropriate for investigating theoretical questions of mass communications and society. Seminar content varies yearly as selection of appropriate methodologies and models may depend on questions investigated. Topics may include field research methods, policy/document analysis, historical research.

Precludes additional credit for Mass Communication 27.401.

Prerequisites: Mass Communication 27.201, 27.311 and Honours standing in Mass Communication or permission of the School.

**Mass Communication 27.410★**

**Selected Topics in Mass Communication Analysis**

For 1998-99, the topic for Section A is: *Canadian Civil Culture: The Rhetoric of Communication Institutions*. Historical development of the major Canadian institutions of communication. Changes in rhetorical practices since the early modern period.

For 1998-99, the topic for Section B is: *Communication and the City*. An examination of cultures of the contemporary global city. Relationships among place, culture, and communication.

Precludes additional credit for Mass Communication 27.411.

Prerequisite: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

**Mass Communication 27.412★**

**Selected Topics in Mass Communication Analysis**

For 1998-99, the topic is: *The Decline of Public Broadcasting*. A comparative analytical examination of the causes and consequences of the decline of public broadcasting in North America, Europe, and Australia from the 1980s to the present day.

Precludes additional credit for Mass Communication 27.411.

Prerequisite: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

**Mass Communication 27.420★**

**Children, Youth and Media**

Children and youth as they relate to mass media and popular culture. Historical and theoretical analysis of the emergence of childhood as a category in the media.

Precludes additional credit for Mass Communication 27.412★ in 95-96, 96-97, 97-98.

Prerequisite: Honours standing in Mass Communication and Mass Communication 27.311 or permission of the school.

Seminar three hours a week.

**Mass Communication 27.430★**

**Communication Policy: Theory and Foundations**

Examination of theoretical perspectives on the role of the State in the production and legitimation of communication and cultural policies, particularly in the context of modern Canadian society. (Also listed as Sociology-Anthropology 56.430★.)

Precludes additional credit for Mass Communication 27.431 and Sociology-Anthropology 56.431, and Mass Communication 27.411 or Sociology-Anthropology 56.411 (taken prior to 1986-87).

Prerequisites: Mass Communication 27.311 or Sociology-Anthropology 56.311 and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

**Mass Communication 27.432★**

**Communication Policy: Institutions and Practices**

This course examines concrete examples of selected policy practices in the communication and cultural policy field and relates them to the institutions, agencies, actors and social interests

shaping the policy formation process in Canada. (Also listed as Sociology-Anthropology 56.432★.)

Precludes additional credit for Mass Communication 27.431 and Sociology-Anthropology 56.431, and Mass Communication 27.411 or Sociology-Anthropology 56.411 (taken prior to 1986-87).

Prerequisites: Mass Communication 27.430★ or Sociology-Anthropology 56.430★ and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

Mass Communication 27.450★

**Mass Media and Capitalist Democracy I**

Examination of major interpretive frameworks for understanding the general historical development of mass communication capitalist democracies such as Canada, Britain, and the United States.

Prerequisites: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the School.

Mass Communication 27.451★

**Mass Media and Capitalist Democracy II**

Consideration of issues related to the history of mass communication in order to assess current theoretical perspectives on media and culture.

Prerequisite: Mass Communication 27.450★ or permission of the School.

Mass Communication 27.497

**Honours Essay**

The Honours Essay, which is a major research essay, is carried out under the direction of a faculty supervisor. The Honours Essay is evaluated by both the supervisor and an appointed reader.\*

Prerequisite: Fourth-year Honours standing in Mass Communication.

\* Students should refer to general Faculty of Public Affairs and Management regulations regarding submission of Honours Essays. (See p. 79.)



# Mathematics and Statistics (Science)

4302 Herzberg Building  
Telephone: 520-2155

Undergraduate Adviser: 520-2150

## Academic Administration

Director, K.S. Williams  
Associate Director, M.J. Moore

Associate Director, Institute for Graduate Studies and Research in Mathematics and Statistics, C.W.L. Garner  
Adviser for Undergraduate Studies, K. Small  
Co-operative Education Program Adviser,  
R. Herz-Fischler

## Teaching Staff

### Professors Emeriti

**M. Csörgö**, B.A. (Budapest), M.A. (McGill), Ph.D. (McGill), F.R.S.C. • **V. Dlab**, R.N.Dr. (Charles), C.Sc. (Charles), Ph.D. (Khartoum), D.Sc. (Charles), F.R.S.C. • **M.S. Macphail**, B.A. (Queen's), M.A. (McGill), D.Phil. (Oxford), D.Sc. (Carleton), F.R.S.C. • **H.H. Schlrmer**, M.A., Ph.D. (Frankfurt)

### Professors

**Donald Dawson**, B.Sc., M.Sc. (McGill), Ph.D. (Massachusetts Institute of Technology), F.R.S.C. • **J.D. Dixon**, M.Sc. (Melbourne), Ph.D. (McGill) • **Cyril W.L. Garner**, B.Sc. (New Brunswick), M.A., Ph.D. (Toronto), F.T.I.C.A. • **Angelo B. Mingarelli**, B.Sc. (Concordia), M.Sc., Ph.D. (Toronto) • **L.D. Nel**, M.Sc. (Stellenbosch), Ph.D. (Cambridge) • **J.N. Pandey**, M.Sc. (Banaras Hindu), Ph.D. (New York) • **J.N.K. Rao**, Ph.D. (Iowa State), F.R.S.C. • **Luis Ribes**, Licenciado en Matematicas (Madrid), M.A., Ph.D. (Rochester), Doctor en Ciencias (Madrid) • **Bruce Richter**, B.Sc. (McGill), M.Math, Ph.D. (Waterloo) • **Kenneth Stuart Williams**, B.Sc. (Birmingham), M.A., Ph.D. (Toronto), D.Sc. (Birmingham)

### Associate Professors

**Amitava Bose**, B.Sc., M. Sc. (McGill), Ph.D. (Carleton) • **Che-Kao Fong**, B.Sc. (Chinese University of Hong Kong), M.Sc., Ph.D. (Toronto) • **Zhicheng Gao**, B.A. (Nanjing), Ph.D. (California at San Diego) • **Roger Herz-Fischler**, B.Sc. (Polytechnic Institute of Brooklyn), M.A., Ph.D. (Oregon) • **A.B.M.L. Kabir**, M.Sc. (Dacca), Ph.D. (Western Ontario) • **L.E. May**, B.Sc., M.Phil. (London), Ph.D. (North Carolina State) • **Sam Melkonian**, B.Sc., M.Sc., Ph.D. (McGill) • **Shirley Mills**, B.Sc., M.Sc. (Manitoba), Ph.D. (Alberta) • **M.J. Moore**, B.Sc., Ph.D. (Birmingham) • **Brian C. Mortimer**, B.Sc. (Carleton), M.Sc. (Alberta), Ph.D. (London) • **Edward J. Norminton**, M.A. (Western Ontario), Ph.D. (Toronto) • **John C. Poland**, M.Sc., Ph.D. (McGill) • **Irwin S. Pressman**, B.Sc. (Manitoba), M.B.A. (Toronto), Ph.D. (Cornell) • **Barbara Szyszkowicz**, B.Sc., M.Sc. (Wroclaw), Ph.D. (Carleton)

### Assistant Professors

**Wojciech Jaworski**, M.Sc. (Copernicus), Ph.D. (Copernicus; Queen's) • **Marion J. MacLeod**, B.Sc., M.Sc. (Queen's) • **Majid Mojirshelbanli**, B.Sc., M.Sc., Ph.D. (Toronto)

### Distinguished Research Professors

**M. Csörgö** • **V. Dlab** • **E.O. Kreyszig** • **M. Rahman** • **A.K.Md.E. Saleh**

### Adjunct Research Professors

**M. Chacron** • **D. Krewski** (Health Canada) • **S.A. Naimpally** • **P. Révész** (Academy of Sciences, Hungary) • **A.B. Singh** (Statistics Canada)

### Adjunct Professors

**J.E. Graham** • **K. Hardy** • **P. Mandi** • **B.M. Puttaswamaiah** • **A. Smith** • **G.K. Zelmer**

### Sessional Lecturers

**A. Alaca** • **S. Alaca** • **I. Ganadry** • **M.A. Hemmi** • **W. Li** • **P. Mandi** • **W. McCormack** • **A. Woodside** • **Y. You** • **C. Zhong**

## Programs in Mathematics and Statistics

The School of Mathematics and Statistics offers a wide variety of programs ranging from those giving a strong training in the theoretical aspects of mathematics and statistics to those which emphasize applications to industry and government.

The School offers both Honours and Major programs leading to the B.Sc. degree. The following is a list and short description of the programs which are available:

### Mathematics (Honours and Major B.Sc.)

The Major programs are generally less theoretical than the Honours programs which may form an excellent introduction to graduate studies. The main areas of concentration are: algebra, analysis, topology, applied mathematics (classical and modern), statistics and probability.

### Computer Mathematics (Honours and Major B.Sc.)

The programs in computer mathematics are designed to provide a student with a background of computer-related mathematical ideas together with a firm base of computer science. These programs are of interest to students who are preparing for careers in government, industry, management, or systems analysis.

The Honours Computer Mathematics program also includes an Information Technology stream.

### Statistics (Honours and Major B.Sc.)

The Honours program is designed primarily for a student who wishes to prepare for a career as a professional statistician. The Major program in Statistics provides the academic groundwork for employment opportunities at the junior methodologist level, in a variety of statistics-related fields.

### Computer Statistics (Honours B.Sc.)

The Honours program in Computer Statistics is designed to provide students with a broad background in three complementary disciplines—computing, statistics, and mathematics—as preparation for careers in informatics (the collection, management, and analysis of information).

### Operations Research (Honours B.Sc.)

Operations Research is an applications-oriented Honours program which deals with the scientific aspects of planning and decision-making. This modern area has evolved from the interaction of researchers and workers in a variety of different fields to become a discipline in its own right.

### Computer Science and Mathematics (Honours B.Sc.)

The Combined Honours program in Computer Science and Mathematics is a limited-enrolment program resembling the Bachelor of Computer Science program, placing equal emphasis on computer science and mathematics. There are two options available for concentration, namely:

**Computing Theory and Numerical Methods**

**Statistics and Computing**

### Combined B.Sc./M.Sc. in Mathematics, or in Statistics

This program is designed as a “fast-track” to enable exceptional students to graduate in four years, with both a B.Sc. and an M.Sc.

## Admission Requirements

### Bachelor of Science (Honours) Programs offered by the School of Mathematics and Statistics

#### First Year

1. The OSSD including six OACs with an average of 75 percent or better, or equivalent, including a core consisting of an OAC in calculus and an OAC in algebra and geometry. An average of 65 percent or better is required over the two core OACs; or
2. The successful completion of 5.0 credits approved for a Qualifying-University year program with a GPA of 8.0 or better, including the core of: 0.5 credit in calculus and 0.5 credit in algebra. Mathematics 69.007★ and 69.017★ must be successfully completed with a GPA over the two courses of 5.0 or better.

### Bachelor of Science (Major) Programs offered by the School of Mathematics and Statistics

The precise course requirements for each of the programs offered by the School of Mathematics and Statistics are given under the specific program entries below.

#### First Year

1. The OSSD including six OACs with an average of 70 percent or better, or equivalent, including a core consisting of an OAC in calculus and an OAC in algebra and geometry. An average of 65 percent or better is required over the two core OACs. Students presenting an average of 65 to 69 percent over the six OACs may be considered on an individual basis; or
2. The successful completion of 5.0 credits approved for a Qualifying-University year program with a GPA of 7.0 or better, including the core of: 0.5 credit in calculus and 0.5 credit in algebra. Mathematics 69.007★ and 69.017★ must be successfully completed with a GPA over the two courses of 5.0 or better.

## Course Requirements

The precise course requirements for each of the programs offered by the School of Mathematics and Statistics are given under the specific program entries below.

#### First Year

For students admitted to a program offered by the School of Mathematics and Statistics, the First-year program leading to the Bachelor of Science degree consists of 5.0 credits, as follows:

- (a) at least 1.0 credit in Mathematics;
- (b) 1.0 credit from the College of Natural Sciences or from the School of Computer Science;
- (c) 1.0 additional credit in Mathematics, or from the College of Natural Sciences or the School of Computer Science;
- (d) 2.0 additional elective credits (excluding Science 60.101★, 60.102★, 60.201★, Social Sciences 03.300★, and Computer Science 95.101★).

### Courses Approved for First-Year Mathematics Programs

Those courses listed on p. 117 (Courses Approved for a First-Year Science Program), excluding Mathematics 69.241★, together with the following:

#### Additional Science Courses

##### Biology

61.192★, 61.193★, 61.216★

##### Chemistry

65.103★, 65.107

##### Geology

67.104★, 67.241★, 67.242★, 67.243★, 67.383★

##### Physics

75.190



## Promotion and Failure

### Full-time Students

To be promoted to the credit system from First year, a full-time student must have passed at least 4.0 credits including at least 3.0 credits in Science. The 3.0 credits in Science must include at least 1.0 credit in Mathematics, and at least 1.0 credit from the College of Natural Sciences or from the School of Computer Science.

Of these 4.0 credits, at least 2.0 credits [including at least 1.0 credit in Mathematics] must be completed with grades of C- or better.

Students in an Honours program must have a GPA of 6.0 or better in Mathematics 69.102 and 69.112, and a GPA of 7.0 or better in any credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★, and in addition, an overall GPA of 4.0 or better.

Students in a Major program must have a GPA of 4.0 or better in Mathematics 69.102 and 69.112, and a GPA of 5.0 or better in any credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★.

Please also see the regulations under the Faculty of Science entry (p. 117), concerning Advanced Standing, the 12-month limit for full-time students, and the section for All Degree Students.

### Part-time Students

To be promoted to the credit system from First year, part-time students must, in the first 6.0 credits of final examination attempts, have passed at least 4.0 credits including at least 3.0 credits in Science. The 3.0 credits in Science must include at least 1.0 credit in Mathematics, and at least 1.0 credit from the College of Natural Sciences or from the School of Computer Science.

Of these 4.0 credits, at least 2.0 credits [including at least 1.0 credit in Mathematics] must be completed with grades of C- or better.

Students in an Honours program must have a GPA of 6.0 or better in Mathematics 69.102 and 69.112, and a GPA of 7.0 or better in any credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★, and in addition, an overall GPA of 4.0 or better.

Students in a Major program must have a GPA of 4.0 or better in Mathematics 69.102 and 69.112, and a GPA of 5.0 or better in any credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★.

Part-time students who fail more than 2.0 credits must apply for readmission to the Faculty of Science.

Please also see the regulations under the Faculty of Science entry (p. 119) for All Degree Students.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (Science, see p. 120) in addition to all School regulations and requirements as set out below.

### B.Sc. (Honours) program in Computer Mathematics:

- (i) a GPA of 6.5 or better on the minimum of 11.0 required credits in mathematics; and
- (ii) a GPA of 6.5 or better on the minimum of 11.0 credits in mathematics and 3.0 credits in computer science.

### B.Sc. (Honours) program in Computer Mathematics — Information Technology stream:

- (i) a GPA of 6.5 or better on the 8.5 required credits in Mathematics; and
- (ii) a GPA of 6.5 or better on the 13.5 credits in Mathematics and Computer Science.

### B.Sc. (Honours) program in Computer Statistics:

- (i) a GPA of 6.5 or better on the 9.0 required credits in mathematics; and
- (ii) a GPA of 6.5 or better on the 13.5 credits in mathematics and computer science.

### B.Sc. (Honours) program in Statistics:

- (i) a GPA of 6.5 or better on the minimum of 11.0 credits in Mathematics and 1.0 credit in Computer Science; and
- (ii) a GPA of 6.5 or better on the 5.0 credits in Statistics (Mathematics 70.259★, 70.265★, 70.355★, 70.356★, 70.358★, 70.359★, 70.450★, and the 1.5 credits selected from 70.451★ to 70.459★).

### For students in Honours programs:

The designation of Honours degree will be determined by the student's GPA on all required credits in the Honours subjects, as stated in the program requirements; however, the School may use discretion in counting the number of Honours credits, where students have more than the minimum number of required credits.

### For students in the Combined Honours program:

The designation of Honours degree will be determined by the student's GPA on all required credits in the two Honours subjects, as stated in the respective program requirements; however, the schools may use discretion in counting the number of Honours credits, where students have more than the minimum number of required credits.

### B.Sc. (Major) program in Computer Mathematics:

- (i) a GPA of 4.0 or better on the 6.0 required credits in mathematics; and
- (ii) a GPA of 4.0 or better on the 10.0 credits in mathematics and computer science.

### B.Sc. (Major) program in Statistics:

- (i) a GPA of 4.0 or better on the minimum of 6.0 credits in Mathematics; and
- (ii) a GPA of 4.0 or better on the 3.5 credits in Statistics (Mathematics 69.257★, 69.259★, 69.353★, 69.354★, 69.357★, 69.358★ and 69.359★).

## Course Substitution regarding Economics 43.220:

Students registered in any Mathematics or Statistics undergraduate program may not take Economics 43.220 for credit.

Students who have already completed Economics 43.220, and who wish to enter a Mathematics or Statistics B.Sc.(Major) program, may be exempted from taking Mathematics 69.257★ and 69.259★ only with permission of the School of Mathematics and Statistics, and provided the grade in Economics 43.220 is B- or better.

## Courses excluded for credit in all programs offered by the School of Mathematics and Statistics

The following courses may not be counted for academic credit (even as free electives) in any program offered by the School of Mathematics and Statistics:

Economics 43.240★, 43.404★; Business 42.230★; Geography 45.206★, 45.303★; Political Science 47.270; Psychology 49.200, 49.300; Social Sciences 03.401★, 03.402★; Social Work 52.250, 52.351★, 52.352★; Sociology/Anthropology 53.203, 54.203, 53.370, 53.403★, 53.404★, 56.450★.

It is understood that a student who has successfully completed one or more of these courses prior to September 1, 1996 will retain credit for these courses.

## B.Sc. (Honours) Programs

### Honours Core Requirements

Prospective Honours students should note that the courses Mathematics 69.102, 69.112, 70.200 and 70.210 provide more than just the basic mathematical techniques; they also provide training in rigorous mathematical thinking and, as such, are basic to the Honours Mathematics programs.



The core requirements for the Honours programs in Mathematics, Computer Mathematics, and Statistics, are as given below.

In certain cases the School may permit a student to replace a course at the Fourth-year level by a graduate course.

Each Honours program requires a total of 20.0 credits including: Mathematics 69.102, 69.112 with an average grade of C+ or better.

Alternatively, students may be admitted to an Honours program in Mathematics after successful completion of First year with:

- (a) a GPA of 7.0 or better on all half credits offered from: Mathematics 69.107★, 69.207★; 69.117★, 69.217★; and
- (b) a weighted GPA of 6.0 or better on all credits offered from: Mathematics 69.102, 69.107★, 69.207★; 69.112, 69.117★, 69.217★.

**Note:** Students offering Mathematics 69.107★ must then take Mathematics 69.207★, and students offering Mathematics 69.117★ must then take Mathematics 69.217★.

Mathematics 70.200, 70.210, 70.244★, 70.265★.

Mathematics 70.493★, 70.494★, 70.495★ (Honours Projects). The Honours Project in Mathematics consists of a written report on some approved topic or topics in the field of Mathematics together with a short lecture on the report. Each student should commence work on the project under a faculty supervisor before June 1 of the year before he or she intends to graduate (for full-time students, this would be the June 1 between Third and Fourth Year). The first draft of the report must be submitted to the supervisor by November 1, and the final draft to the School by January 15. Students who do not meet this latter deadline will be given the grade F.

#### Breadth Requirement:

At least 4.0 credits outside the School of Mathematics and Statistics and the School of Computer Science, including: at least 1.0 credit from the College of Natural Sciences, and at least 2.0 arts or social science credits. Of these 4.0 credits, at least 2.0 credits must be at the 200-level or above.

In each program, the remaining courses may be chosen from any department/school, including Mathematics and Statistics, subject only to the restriction that of the total of 20.0 credits, not more than 7.0 may be below the 200-level.

### Course Requirements for Honours Programs:

#### Mathematics B.Sc. (Honours)

This program requires a minimum of 11.0 credits in Mathematics.

Course requirements for this program are:

1. Honours core requirements (see p. 332);
2. Mathematics 70.301★, 70.307★, 70.310, and at least one of 70.302★ or 70.308★;
3. 1.5 credits in Mathematics (70 series) at the 300-level or above;
4. 1.5 credits in Mathematics (70 series) at the 400-level or above.

**Note:** It is strongly recommended that Mathematics 70.301★ be taken in the Third year.

Students wishing to specialize in *Applied Analysis* may, with permission of the School, replace items 2, 3, and 4 in the Mathematics degree requirements by:

2. Mathematics 70.302★, 70.307★, 70.308★, 70.346★, 70.356★, and 1.0 credit from Mathematics 69.381★, 69.384★, 69.386★, and Honours courses in Mathematics (70 series) at the 300-level or above;
3. Mathematics 70.470★, at least one of 70.471★, 70.472★, and 0.5 additional credit in Mathematics at the 400-level;
4. an additional 0.5 credit, chosen from Computer Science (95 series, 200-level or above) or from Mathematics (70 series, at the 300-level or above).

Students wishing to specialize in *Stochastics* may, with permission of the School, replace items 2, 3, and 4 in the Mathematics degree requirements by:

2. Mathematics 70.301★, 70.308★, 70.356★, 70.358★, 70.359★, and one of 70.355★, 69.381★;
3. Mathematics 70.451★, and 0.5 credit selected from the range 70.450★ to 70.459★;
4. 1.0 credit in Mathematics at the 400-level or above;
5. an additional 0.5 credit chosen from Computer Science (95 series, 200-level or above) or from Mathematics (70 series or 69.384★, 69.386★).

Students specializing in *Applied Analysis* or *Stochastics* are encouraged to include at least 1.5 credits in Computer Science in their program.

#### Computer Mathematics B.Sc. (Honours)

This program requires a total of 20.0 credits; this includes a minimum of 14.0 credits in Mathematics and Computer Science in the main program, or 13.5 credits in Mathematics and Computer Science in the Information Technology stream.

Students may also be admitted to the Information Technology stream of this program after completing the B.Sc.(Major) [or the former B.A.(Pass)] program in Computer Mathematics, provided that Faculty of Science requirements concerning Honours standing have been maintained. Students with Honours standing from their B.Sc.(Major) [or the former B.A.(Pass)] program in Computer Mathematics would require 5.0 additional credits in the Information Technology stream of this honours program: 3.5 credits in Mathematics and Computer Science [6, 7, 8 below], and 1.5 credits of options [from 9].

See graduation requirements, p. 120.

Course requirements for this Honours program are as follows:

#### Computer Mathematics:

1. Honours core requirements (see p. 332);
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★;
3. Mathematics 69.384★, 70.301★;
4. Mathematics 70.310, or Mathematics 70.385★ and 69.381★;
5. 1.0 credit from Mathematics 69.304★, 69.381★, 69.386★ and courses in the range Mathematics 70.302★ and above;
6. Mathematics 70.259★ and 70.356★, or 70.358★ and 70.359★;
7. Mathematics 70.486★, and one of 70.482★ or 70.483★;
8. an additional 0.5 credit from Mathematics 70.481★, 70.482★, 70.483★, 70.485★, 70.488★, or an approved 0.5 credit at the graduate level (70.580 series);
9. 1.0 additional credit in Computer Science at the 200-level or above.

#### Computer Mathematics — Information Technology stream:

1. Mathematics 69.102 (or 69.107★ and 69.207★), and Mathematics 69.112 (or 69.117★ and 69.217★) [for the GPA requirements over these courses, please see the GPA statement under Honours Core Requirements, p. 332];
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★, 95.204★;
3. Mathematics 69.208★, 69.265★; and 69.218★ or 69.311★;
4. Mathematics 69.384★, 70.385★; at least one of Mathematics 69.381★ or 69.386★; and 1.0 additional credit in Mathematics at the 300-level (excluding 69.352★);
5. an additional 0.5 credit in Computer Science (95-series) at the 200-level or above [and 95.305★ or 95.304★ are highly recommended]; and 1.0 additional credit in Mathematics or Computer Science at the 200-level or above;
6. Mathematics 70.494★ or 70.495★; and 1.0 additional credit in Mathematics and Statistics, 400-level or above;
7. 1.0 credit in Computer Science (95-series), at the 300-level or above;



8. 1.0 credit in Mathematics and Statistics, at the 300-level or above;

9. Students must also include 1.0 credit from the College of Natural Sciences, 2.0 arts or social science credits, and have 3.5 credits of free electives, subject to the Breadth Requirement on p. 333.

In this program, of the total of 20.0 credits required, not more than 7.0 may be below the 200-level.

#### Notes :

1. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free electives.

2. With the permission of the School of Mathematics and Statistics, Computer Science 95.105★ may be replaced by one of the following courses:

Computer Science 95.103★, 95.107★, Business 42.140★, 42.142★, or Engineering 91.166★.

3. Only one of the courses listed in Note 2 may count for credit in the Computer Mathematics degree program.

### Computer Statistics B.Sc. (Honours)

This program is designed to provide students with a broad background in computing, statistics and mathematics in preparation for careers in informatics - the collection, management and analysis of information (e.g., data mining and knowledge discovery in databases). This program requires a total of 20.0 credits, including a minimum of 13.5 credits in Mathematics and Computer Science (8.5 in Mathematics and 4.5 in Computer Science, plus an Honours project).

See graduation requirements, p. 120.

Course requirements for this Honours program are as follows:

1. Mathematics 69.102 (or 69.107★ and 69.207★), and Mathematics 69.112 (or 69.117★ and 69.217★) [for the GPA requirements over these courses, please see the GPA statement under Honours Core Requirements, p. 332];

2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★, 95.204★; one additional credit in Computer Science, 200-level or above (95.203★, 95.304★ and 95.305★ are recommended);

3. Mathematics 70.265★ (or 69.265★) and 70.259★ (may be replaced by 69.257★ and 69.259★, with a minimum grade of B in each); 70.358★ and 70.359★ (may be replaced by 69.358★ and 69.359★, with a minimum grade of B in each); 70.355★, 70.356★;

4. Mathematics 69.208★; 69.384★; 69.386★; one of 69.218★ or 69.311★;

5. Mathematics 70.493★ (Honours Project);

6. 1.5 credits from Mathematics 70.450★ - 70.459★;

7. 1.0 credit in Computer Science at the 300-level or above;

8. Students must also include 1.0 credit from the College of Natural Sciences, 2.0 arts and social science credits, and have 3.5 credits of free electives, subject to the Breadth Requirement on p. 333.

In this program, of the total of 20.0 credits required, not more than 7.0 may be below the 200-level.

#### Notes :

1. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free options.

2. With the permission of the School of Mathematics and Statistics, Computer Science 95.105★ may be replaced by one of the following courses:

Computer Science 95.103★, 95.107★, Business 42.140★, 42.142★, or Engineering 91.166★.

3. Only one of the courses listed in Note 2 may count for credit in the Computer Statistics degree program.

### Statistics B.Sc. (Honours)

This program requires a minimum of 11.0 credits in Mathematics and Statistics. The program is of particular interest to a student wishing to pursue a career as a professional statistician.

See graduation requirements, p. 120.

Course requirements for this program are:

1. Honours core requirements (see p. 332; Mathematics 70.210 may be deferred until Third year, and may be replaced by Mathematics 69.317★, plus 0.5 credit from: Honours Mathematics at the 300-level or above, and Mathematics 69.304★, 69.381★, 69.387★, 69.389★);

2. Mathematics 70.259★;

3. (a) Computer Science 95.107★, 95.108★; or  
(b) Computer Science 95.105★, 95.106★;

4. Mathematics 70.355★, 70.356★, 70.358★, 70.359★, 69.386★, and an additional 0.5 credit in Mathematics (70-series) at the 300-level or above;

5. Mathematics 70.450★, and 1.5 credits from the range Mathematics 70.451★ to 70.459★.

Students considering a career in actuarial science are advised to include Mathematics 69.381★ in their program.

### Operations Research B.Sc. (Honours)

Operations Research (O.R.) originated just before World War II as a response to the need to implement the newly invented RADAR into an operational tool for the Royal Air Force. An O.R. Section was formed to develop a scientific approach to the analysis of problems such as air-defense and logistics. In antisubmarine warfare, for example, improvements were made to the spacing and settings of depth charges based on scientific measurement and analysis of data.

O.R. is now a common management tool and is a component of the training of many disciplines. It is also called Management Science or Industrial Management. O.R. is used extensively in business and industry for:

a) scheduling of vehicles, production or personnel

Airlines must satisfy their need for air crews for all routes but want to minimize the staff required. They may also wish to give pilots a choice of routes, based on seniority, and minimize the total number of nights that crews sleep away from home. These problems can be solved by integer programming.

b) network design

Telephone companies need to provide an optimal number of lines and switches to handle peak telecommunication traffic at minimal cost. The problem includes determining the optimal locations for the switching stations and the best topology for the network.

c) determination of optimal mixes

Oil refineries receive oils from different locations, with different chemical composition. Refiners need to find the optimal choice of products such as gasoline, heating oil, diesel fuel, or naphtha to maximize their profits.

There is currently a great deal of theoretical activity in the mathematical side of O.R., especially in the areas of mathematical programming, graph theory, algorithms, complexity, stochastic modelling, economics, and queueing. The Travelling Salesman Problem is an instance of an active area of interest to O.R. researchers.

The program at Carleton University was designed in consultation with employers of O.R. professionals and the Canadian Operations Research Society. Graduates of this program will be prepared for careers either in government or in the private sector, and they will be qualified to continue in graduate programs.

Students who are planning to apply for admission to this program should have good quantitative skills. The recommended courses provide a broad range of O.R. techniques and methodologies which include: statistical analysis, stochastic processes, linear and non-linear optimization, network theory, mathematical mod-



elling and computer simulation. It is recommended that students acquire an understanding of the human side of the O.R. discipline through study within the Social Sciences.

A total of 20.0 credits is required in accordance with the conditions given below. All course selections must be approved by the School of Mathematics and Statistics.

Students must include in their First-year course selection either 1.0 credit from the College of Natural Sciences or 1.0 credit in Computer Science.

1. Mathematics 69.102, 69.112 with an average grade of C+ or better.

Alternatively, students may be admitted to the Honours program in Operations Research after successful completion of First year with:

- (a) a GPA of 7.0 or better on all half credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★; and
- (b) a weighted GPA of 6.0 or better on all credits offered from Mathematics 69.102, 69.107★, 69.207★, 69.112, 69.117★, 69.217★.

**Note:** Students offering Mathematics 69.107★ must then take 69.207★, and students offering 69.117★ must then take 69.217★.

- 2. (a) Mathematics 70.200, 70.244★, 70.259★, 70.265★;
- 2. (b) either: Mathematics 69.317★ and 69.311★; or Mathematics 70.210;
- 3. Mathematics 69.381★, 69.386★;
- 4. Mathematics 70.460★, 70.495★; at least 1.0 credit in probability/statistics (70-series) at the 300-level or higher; at least 1.0 additional credit in Mathematics and Statistics at the 400-level or higher;
- 5. Computer Science 95.105★ and 95.106★; or 95.107★ and 95.108★ (or equivalents); and at least 1.0 credit in Computer Science at the 200-level or higher;
- 6. 3.5 credits in an approved field of interest, of which at least 1.0 credit is at the 300-level or higher. The choice of field must be made in consultation with and approved by the Program Coordinator. Students are required on an annual basis to make a specific plan for completing their requirements, which is to be submitted in advance of registration for the approval of the Operations Research Committee.
- 7. The remaining credits are free electives.
- 8. Of the 20.0 credits required, not more than 7.0 may be below the 200-level.

Students must take 2.0 arts or social science elective credits, and should note the statement concerning social science electives, as outlined on p. 117, as well as the Breadth Requirement on p. 333.

### Computer Science and Mathematics (Combined Honours B.Sc.)

This program is administered by a committee with representatives from the School of Computer Science and the School of Mathematics and Statistics.

Enrolment in this program is limited. Applicants should note that meeting the minimum published requirements for admission to this program does not imply automatic acceptance.

#### Continuation in the Program:

To continue in the program, a student must:

- (a) by the end of August each year, have gained at least 0.5 credit in the past 12 months towards the degree requirements, and
- (b) have accumulated a GPA of 6.5 or better in each of Computer Science and Mathematics, and a GPA of 5.0 or better overall. (GPAs are to include any failing grades that have not yet been replaced by a passing grade in the same or a substitute course.)

Failure to comply with these standards requires withdrawal from the program.

This program requires a minimum of 15.0 credits in Computer Science and Mathematics, placing equal emphasis on both these

disciplines. Students may choose one of two options which serve as areas of concentration. All course selections must be approved both by the School of Mathematics and Statistics and the School of Computer Science. A total of 20.0 credits is required in accordance with the conditions given below.

**Note:** Some courses offered by the School of Business and the Department of Systems and Computer Engineering may be taken for credit as Computer Science courses in this program. For a complete list of these courses see p. 210.

#### Core Requirements (10.0 credits in Mathematics and Computer Science):

1. Mathematics 69.102, 69.117★; Computer Science 95.102★, 95.105★, 95.106★;

**Note:** Students who wish to keep open the choice of other Honours programs in Mathematics and Statistics are advised to take Mathematics 69.112 instead of 69.117★ (and 69.217★).

2. Mathematics 70.200, 69.217★; Computer Science 95.202★, 95.203★, 95.204★ and 95.304★;

3. Mathematics 70.210; Computer Science 95.300★, 95.305★, 95.384★, 95.385★; Mathematics 70.495★ or Computer Science 95.495★.

4. 1.0 credit from the College of Natural Sciences. 2.0 credits in arts or social science disciplines. Concerning social science electives, see the note on p. 117, as well as the Breadth Requirement on p. 333.

5. 2.0 free option credits, subject only to the requirement that of the total of 20.0 credits, not more than 7.0 may be below the 200-level.

Candidates must also satisfy one of the following option requirements, each of which contains a total of 5.0 credits in Computer Science and Mathematics.

#### Option: Computing Theory and Numerical Methods (CTNM)

- 1. Mathematics 70.244★, 70.265★;
- 2. Mathematics 69.381★, 69.386★ and one of Mathematics 70.301★, 70.302★, 70.307★, 70.308★;
- 3. Computer Science 95.484★, and 1.0 credit from Mathematics 70.481★, 70.482★, 70.483★, 70.485★, 70.486★, 70.488★;
- 4. 1.0 additional credit in Computer Science at the 300-level or above.

#### Option: Statistics and Computing (STC)

- 1. Mathematics 70.244★, 70.259★, 70.265★;
- 2. Mathematics 70.358★, 70.359★ and at least one of 70.355★, 70.356★;
- 3. 1.0 credit in Mathematics from the range Mathematics 70.450★ to 70.459★;
- 4. 1.0 credit in Computer Science at the 400-level.

### The Co-operative Education Option

General information on the Co-operative Education Option can be found on p. 39.

Co-operative Education formally integrates the student's academic experience with work experience in the private and public sectors. Work opportunities, which are available on a competitive basis, are coordinated to complement the student's course work and interests. Practical work experience provides insights and opportunities for development which enhances what is learned in regular course work, and prepares individuals for fulfilling careers in the work place. Specific details of the Option are to be found in the Mathematics and Statistics Co-op Student Handbook.



## Admission Requirements

Students are eligible to enter the Co-op Option in one of two ways: (i) directly from high school; (ii) after completion of 5.0 or more credits (at least 2.0 in Mathematics/Statistics) at Carleton in an Honours program offered by the School of Mathematics and Statistics. In case (i), students must have received marks of 80 percent or better in each of OAC Calculus and OAC Algebra and Geometry (or equivalent). In case (ii), students must have a GPA of 8.0 or more in the mathematics and statistics courses required in their program and an overall GPA of 6.5 or better in their Mathematics and Statistics Honours program. Students must have full time status in each academic term immediately preceding a work term. Eligibility to work in Canada is required for off-campus work placements.

Further details and application forms may be obtained from the Mathematics and Statistics General Office.

## The Work/Study Sequence

The normal pattern of work and study terms in the Co-operative Option is as follows:

Calendar Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	
2	Study Term 3	Study Term 4	Work Term 1
3	Study Term 5	Work Term 2	Work Term 3
4	Work Term 4	Study Term 6	Work Term 5
5	Study Term 7	Study Term 8	

Variations in the above pattern may be requested.

If no suitable job placements can be made, students will revert to their Honours program.

## Continuance in the Co-operative Option

During a work term, Co-op Option students will register in one of five Work Term courses: Mathematics 70.220★, 70.320★, 70.321★, 70.420★ or 70.421★. The Work Term courses, must be taken in addition to the number of credits required for an honours degree. Each Work Term course will be graded *Sat* or *Uns*, based on both the employer's evaluation and the student's Work Term Report.

## Graduation Requirements

All work terms should normally be completed prior to starting the last academic term. In addition to satisfying the requirements of the Co-operative Option as described above, a student must have completed the required credits specified for one of the Mathematics and Statistics Honours programs and at least four work term courses graded "Satisfactory".

Students who successfully complete the Honours degree requirements and who have registered in and successfully completed at least four work term courses will receive a Co-operative Option degree designation on both their transcript and diploma.

## B.Sc. (Major) Programs

### Core Requirements

The requirements given below are common to all Major programs in the School of Mathematics and Statistics.

In certain cases the School may permit a student to replace courses listed in the 69 series by the corresponding Honours (70 series) courses.

Each Major program requires a total of 15.0 credits, including:

Mathematics 69.102, 69.112 with an average grade of C- or better.

Alternatively, students may be admitted to a Major program in Mathematics after successful completion of First year with:

- (a) a minimum GPA of 5.0 on all half credits offered from: Mathematics 69.107★, 69.207★; 69.117★, 69.217★; and  
(b) a minimum weighted GPA of 4.0 on all courses offered from: Mathematics 69.102, 69.107★, 69.207★; 69.112, 69.117★, 69.217★.

**Note:** Students offering Mathematics 69.107★ must then take Mathematics 69.207★, and students offering Mathematics 69.117★ must then take Mathematics 69.217★.

### Breadth Requirement:

At least 4.0 credits outside the School of Mathematics and Statistics and the School of Computer Science, including: at least 1.0 credit from the College of Natural Sciences, and at least 2.0 arts or social science credits. Of these 4.0 credits, at least 2.0 credits must be at the 200-level or above.

In each program, the remaining courses may be chosen from any department/school, including Mathematics and Statistics, subject only to the restriction that of the total of 15.0 credits not more than 7.0 may be below the 200-level.

## Course requirements for Major programs:

### Mathematics B.Sc. (Major)

This program requires a minimum of 7.0 credits in mathematics.

Course requirements for this program are:

1. core requirements (see p. 336);
2. Mathematics 69.208★, 69.218★, 69.244★, 69.257★;
3. 3.0 credits in Mathematics selected from the range 69.304★ to 69.389★, excluding 69.311★, 69.352★, 69.375★ and 69.376★.

With permission of the School, one or more of the courses in requirement 3 may be replaced by a course in the 70 series at the 300- or 400-level, provided that of the total of 3.0 credits, not more than 2.0 are in the same area.

**Note:** Students wishing to specialize in *Applied Analysis* may, with the permission of the School, replace requirements 2 and 3 in the Mathematics degree requirements by:

2. Mathematics 69.208★, 69.244★, 69.257★;
3. Mathematics 69.304★, 69.307★, and one of Mathematics 69.344★, 69.381★, 69.386★, or Physics 75.381★;
4. 1.0 additional credit in Mathematics at the 300-level, excluding 69.311★ and 69.352★;
5. 1.0 additional credit at the 200- or 300-level chosen from Mathematics or Computer Science.

Students specializing in *Applied Analysis* are encouraged to include at least 1.5 credits in Computer Science in their program.

### Computer Mathematics B.Sc. (Major)

This program requires a total of 15.0 credits, including a minimum of 10.0 credits in Mathematics and Computer Science.

See graduation requirements, p. 120.

Course requirements for this program are as follows:

1. Mathematics 69.102 (or 69.107★ and 69.207★), and Mathematics 69.112 (or 69.117★ and 69.217★) [for the GPA requirements over these courses, please see the GPA statement under Core Requirements, p. 336];
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★, 95.204★;
3. Mathematics 69.208★, 69.265★; 69.218★ or 69.311★;
4. Mathematics 69.384★, 70.385★; at least one of Mathematics 69.381★ or 69.386★; and 1.0 additional credit in Mathematics at the 300-level (excluding 69.352★);



5. an additional 0.5 credit in Computer Science (95-series) at the 200-level or above (and 95.305★ or 95.304★ are highly recommended), and 1.0 additional credit in Mathematics or Computer Science at the 200-level or above;

6. Students must also include 1.0 credit from the College of Natural Sciences, 2.0 arts or social science credits, and have 2.0 credits of free electives. Please see the Breadth Requirement under the Core Requirements on p. 333.

In this program, of the total of 15.0 credits required, not more than 7.0 may be below the 200-level.

#### Notes:

1. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free electives.
2. With the permission of the School of Mathematics and Statistics, Computer Science 95.105★ (a required course) may be replaced by one of the following courses: Computer Science 95.103★, 95.107★, Business 42.140★, 42.142★, or Engineering 91.166★.
3. Only one of the courses listed in Note 2 may count for credit in the Computer Mathematics degree program.

### Statistics B.Sc. (Major)

This program requires a minimum of 6.0 credits in Mathematics and Statistics.

See graduation requirements, p. 120.

Course requirements for this program are:

1. core requirements (see p. 336);
2. Mathematics 69.208★, 69.257★, 69.259★;
3. Mathematics 69.353★, 69.354★, 69.357★, 69.358★, 69.359★;
4. 1.0 additional credit at the 200-level or above chosen in a relevant topic from courses offered by the Faculty of Science, the School of Computer Science or the Faculty of Arts and Social Sciences. This credit is in addition to the Breadth Requirement in the Core Requirements on p. 333.

Students majoring in Statistics are urged to include at least 1.0 credit in Computer Science in their program. Students are advised to consult the School of Computer Science regarding the most appropriate courses.

Students considering a career in actuarial science are advised to include Mathematics 69.381★ and 69.386★ in their program.

### Combined B.Sc./M.Sc. in Mathematics, or in Statistics

This program is designed as a "fast-track" to enable exceptional students to graduate in four years, with both a B.Sc. and an M.Sc. degree. It requires a minimum of 9.5 credits in Mathematics and Statistics, and 6.0 other credits towards a B.Sc.(Major) degree; and then, either 2.5 credits in graduate studies and a thesis, or 4.0 credits in graduate studies and Mathematics 70.495★ (Honours Project), for the M.Sc. degree.

Entry to this program directly from an Ontario High School requires both of the following averages:

- (I) an average of 90 percent or better on the OACs in Calculus and Algebra and Geometry; and
- (II) an average of 85 percent or better over six OACs.

Other applicants should consult the School.

Entry and continuation in the undergraduate portion of this program as well as entry to the graduate portion require minimum GPAs of 11.0 in Mathematics and Statistics, and 10.0 overall.

Mathematics courses required for this program are:

#### A. for the B.Sc./M.Sc. (Mathematics):

##### First Year

1. Mathematics 69.102, 69.112.

##### Second Year

2. Mathematics 70.200, 70.210, 70.244★, 70.265★, and 0.5 credit (70-series) at the 300-level or above.

##### Third Year

3. Mathematics 70.301★, 70.307★, 70.310, and at least one of 70.302★ or 70.308★; in addition, 1.5 credits at the 400-level or above in Mathematics and Statistics.

##### Fourth Year

4. (registration as a graduate student) Mathematics 70.495★ and 4.0 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department/school); OR: an M.Sc. thesis and 2.5 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department/school).

Please refer to the Graduate Calendar for specific graduate requirements.

Students wishing to specialize in **Stochastics** may, with the permission of the School, replace the Second Year requirement of 0.5 credit at the 300-level or above by Mathematics 70.259★, and replace item 3 above by: Mathematics 70.301★, 70.356★, 70.358★, 70.359★, and one of 70.302★, 70.307★, 70.308★; and at least 1.5 credits at the 400-level or above in Mathematics and Statistics.

#### B. for the B.Sc./M.Sc. (Statistics):

##### First Year

1. Mathematics 69.102, 69.112.

##### Second Year

2. Mathematics 70.200, 70.210, 70.244★, 70.259★, 70.265★.

##### Third Year

3. Mathematics 70.301★, 70.355★, 70.356★, 70.358★, 70.359★ and at least 1.5 credits at the 400-level or above in Mathematics and Statistics.

##### Fourth Year

4. (registration as a graduate student) Mathematics 70.495★ and 4.0 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department/school); OR: an M.Sc. thesis and 2.5 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department/school).

Please refer to the Graduate Calendar for specific graduate requirements.

Before entry into the Fourth year of this program, students must: obtain a recommendation from the School of Mathematics and Statistics to continue, apply to transfer to the B.Sc.(Major) program and apply to graduate with a B.Sc.(Major) degree, by the end of January of their Third year, and submit an application for graduate studies to the Department by mid-February.

### Minor in Mathematics, or in Statistics

Students registered in degree programs [excluding programs offered by the School of Mathematics and Statistics] may obtain a "Minor in Mathematics" or a "Minor in Statistics" designation on their transcript and diploma by completing the appropriate courses specified below, with a minimum graduation average of 4.0 over the required credits.

When applying to graduate, students who have successfully completed all requirements must inform their Registrarial Services Office if they wish to receive the "Minor in Mathematics" or the "Minor in Statistics" designation on their transcript and diploma.



**Minor in Mathematics:**

4.0 credits of mathematics courses required:

- i) 0.5 credit from Mathematics 69.104★, 69.107★, or 69.109★, followed by 69.207★; or 1.0 credit: Mathematics 69.102;
- ii) 0.5 credit from Mathematics 69.114★, 69.117★, or 69.119★, followed by 69.217★; or 1.0 credit: Mathematics 69.112;
- iii) 1.0 credit in Mathematics at the 200-level or above;
- iv) 1.0 credit in Mathematics at the 300-level or above (of these 4.0 credits, 2.0 must be taken at Carleton University).

**Minor in Statistics:**

4.0 credits of courses required:

- i) 0.5 credit from Mathematics 69.104★, 69.107★, 69.109★, or 1.0 credit: Mathematics 69.102; and 0.5 credit from Mathematics 69.114★, 69.117★, 69.119★, or 1.0 credit: Mathematics 69.112;
- ii) either (a) or (b):
  - (a) one of: Mathematics 69.257★, 69.266★, 69.352★; and one of: Mathematics 69.259★, 69.267★;
  - (b) Economics 43.220, or 1.0 credit of approved introductory statistics;
- iii) Mathematics 69.353★, 69.354★, 69.357★
- iv) 0.5 credit in an approved course in computer programming at the 100-level or above, i.e. Computer Science 95.105★, 95.107★, Business 42.142★, Engineering 91.166★ (of these 4.0 credits, 2.0 must be taken at Carleton University).

**Graduate Programs: M.Sc. and Ph.D.**

For requirements for graduate degrees, see the *Calendar for the Faculty of Graduate Studies and Research*.

**Course Numbering**

Course numbers prefixed by 70 indicate courses intended primarily for Honours students; all other courses have numbers prefixed by 69. Credit will not be given for two courses having the same number but different prefixes.

**Deferred Final Examinations**

In the following courses in Mathematics and Statistics, where the course is offered in two successive terms, the Deferred Final Examination for the first course will be taken as the second course final examination, except where such a requirement might delay graduation in the Fall:

Mathematics 69.007★, 69.017★, 69.107★, 69.109★, 69.117★, 69.119★, 69.207★, 69.208★, 69.217★, 69.257★, 69.259★.

**Prerequisites for First-Year Calculus and Algebra Courses****1. Pre-University Calculus:**

An OAC in Calculus, or Mathematics 69.007★, or equivalent.

Students lacking an OAC in Calculus (or equivalent) must successfully complete Mathematics 69.007★ prior to taking a 100-level Calculus course.

For students in any program offered by the School of Mathematics and Statistics, the above requirement of Mathematics 69.007★ is in addition to the minimum 15.0 credits in Major programs, or 20.0 credits in Honours programs.

**2. Pre-University Algebra:**

An OAC in Algebra and Geometry, or Mathematics 69.017★, or equivalent.

**Note:** An OAC in Finite Mathematics is not an equivalent.

Students lacking an OAC in Algebra and Geometry (or equivalent) must successfully complete Mathematics 69.017★ prior to taking a 100-level Algebra course.

**First-Year Course Selection**

1. Mathematics 69.102, 69.112 (students in the Faculties of Arts and Social Sciences, or Science). This choice is required of students in First year who are in a Mathematics program;
2. Fall term: Mathematics 69.104★; Winter term: Mathematics 69.105★, 69.114★ (students in the Faculty of Engineering);
3. Fall term: Mathematics 69.107★; Winter term: Mathematics 69.114★ (students in the School of Computer Science);
4. Fall term: Mathematics 69.107★; Winter term: Mathematics 69.117★ (students in the Faculty of Science);
5. Mathematics 69.102; Fall term: Mathematics 69.117★ (students in the Faculty of Science);
6. Fall term: Mathematics 69.107★, 69.117★; Winter term: Mathematics 69.207★, 69.217★ (students in the Faculties of Arts and Social Sciences, or Science);
7. Fall term: Mathematics 69.109★; Winter term: Mathematics 69.119★ (students in the School of Business, Department of Economics or in other Arts or Social Sciences departments).

**Note:** Credit will only be given for one of: Mathematics 69.102, 69.104★, 69.107★, 69.109★; and one of: Mathematics 69.112, 69.114★, 69.117★, 69.119★.

**Courses**

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

**Note:** Students who have completed Ontario Grade 12 Mathematics, but who have been away from mathematics for several years, or who feel that their mathematics background is weak, should consider taking the course "Basic Mathematics". This non-credit course is offered through the Centre for Initiatives in Education, and is highly recommended for remedial purposes.

**Mathematics 69.007★****Introductory Calculus**

Limits and continuity. Differentiation. Trigonometric, logarithmic, and exponential functions and their derivatives; curve sketching; applied problems in maxima and minima, and related rates.

Not available for degree credit for students who have successfully completed an OAC in Calculus/or an equivalent High School Calculus course.

Precludes additional credit for Business 42.173.

Prerequisite: Grade 12 Mathematics (Advanced/Academic Level) or Mathematics 69.006★ or equivalent. It is strongly recommended that Mathematics 69.017★ or the equivalent be taken before 69.007★.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.017★****Algebra and Geometry**

Vectors in the plane and in 3-space. Linear combinations and linear independence. Equations of lines and planes in space. Solution of systems of linear equations. Complex numbers (including de Moivre's Theorem, and n-th roots). Proofs by induction.

Not available for degree credit for students who have successfully completed an OAC in Algebra and Geometry/or an equivalent High School Algebra course.

Prerequisite: Grade 12 Mathematics (Advanced/Academic Level) or Mathematics 69.006★ or equivalent.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.102****Calculus**

This course is strongly recommended for students intending to specialize in mathematics, statistics, physics, or related areas. Limits, differentiation, the definite integral, elementary functions, techniques of integration, parametric equations and polar coordi-



notes. Improper integrals, L'Hôpital's rules, sequences and series, Taylor's formulae, introduction to differential equations.

Precludes additional credit for Mathematics 69.104★, 69.105★, 69.107★, 69.109★, 69.207★, and for 69.201, 69.202.

Prerequisites: (i) a pre-university calculus course with a grade of 65 percent or better; and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★, or permission of the School. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 338.)

Lectures three hours a week and one hour tutorial.

**Note:** Although the main prerequisite for Mathematics 69.102 is a grade of 65 percent or better in a pre-university calculus course, past experience indicates that students with less than 75 percent in their prerequisite calculus have only a small chance of success in Mathematics 69.102.

#### Mathematics 69.104★

##### **Calculus for Engineering Students**

The definite and indefinite integral; numerical approximation. Special functions (trigonometric and inverse trigonometric, logarithm and exponential), their derivatives and integrals. Applications: area, volume, average value. Further techniques of integration: integration by parts, partial fractions, and substitutions. Introduction to differential equations.

Restricted to students in the Faculty of Engineering.

Precludes additional credit for Mathematics 69.102, 69.107★, 69.109★.

Prerequisite: an OAC in Calculus, or Mathematics 69.007★ (or equivalent).

Lectures three hours a week and one hour tutorial.

#### Mathematics 69.105★

##### **Differential Equations and Infinite Series for Engineering Students**

Further study of first-order differential equations. Linear differential equations with constant coefficients; undetermined coefficients; annihilator operators. Variation of parameters. Euler-Cauchy differential equation. Indeterminate forms. Sequences and series; convergence tests; estimation of sums. Power series; Taylor series; remainders. Use of power series to solve differential equations.

Restricted to students in the Faculty of Engineering.

Precludes additional credit for: Mathematics 69.102, 69.201, 69.202, 69.207★, 69.244★, 70.244★ and 70.260.

Prerequisites: (i) Mathematics 69.104★, or a grade of C- or better in 69.107★; and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★; or permission of the School.

Lectures three hours a week, tutorial one hour a week.

#### Mathematics 69.107★

##### **Elementary Calculus I**

Definite and indefinite integrals, differentiation and integration of the elementary functions, techniques and applications of integration.

Precludes additional credit for Mathematics 69.102, 69.104★, 69.109★.

Prerequisite: an OAC in Calculus, or Mathematics 69.007★ (or equivalent).

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

**Notes:** 1. Students with less than 60 percent in their pre-university calculus course are advised that past experience indicates their chance of success in Mathematics 69.107★ is small.

2. A grade of C- or better in Mathematics 69.107★ is a prerequisite for certain 200-level Mathematics courses.

#### Mathematics 69.109★

##### **Calculus: with Applications to Business and Economics**

Definite and indefinite integrals; integration of the elementary functions; some techniques of integration. Functions of several variables; partial differentiation; constrained optimization. Selected applications in business and economics.

Precludes additional credit for Mathematics 69.102, 69.104★, and 69.107★.

Prerequisite: an OAC in Calculus, or Mathematics 69.007★ (or equivalent).

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

**Note:** Students with less than 60 percent in their pre-university calculus course are advised that past experience indicates their chance of success in Mathematics 69.109★ is small.

#### Mathematics 69.112

##### **Algebra**

Fields, complex numbers, vector algebra and geometry in 2 and 3 dimensions, matrix algebra, linear dependence, bases, linear transformations, bilinear and quadratic forms, inner products, eigenvalues, principal axis theorem. Strongly recommended for students intending to specialize in mathematics, statistics, physics, or related areas.

Precludes additional credit for Mathematics 69.114★, 69.117★, 69.119★, 69.217★.

Prerequisites: (i) a pre-university algebra course with a grade of 65 percent or better, and (ii) an OAC in Calculus, or Mathematics 69.007★, or permission of the School. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 338.)

Lectures three hours a week and one hour tutorial.

**Note:** Although the main prerequisite for Mathematics 69.112 is a grade of 65 percent or better in a pre-university algebra course, past experience indicates that students with less than 75 percent in their prerequisite mathematics have only a small chance of success in Mathematics 69.112.

#### Mathematics 69.114★

##### **Linear Algebra for Engineering and Computer Science Students**

Systems of linear equations. Matrix algebra. Determinants. Complex numbers. Eigenvalues. Diagonalization and applications. Restricted to students in the Faculty of Engineering or in the School of Computer Science.

Precludes additional credit for Mathematics 69.112, 69.117★, 69.119★.

Prerequisite: an OAC in Algebra and Geometry, or Mathematics 69.017★ (or equivalent).

Lectures three hours a week and one hour tutorial.

#### Mathematics 69.117★

##### **Linear Algebra I**

Systems of linear equations; vector space of n-tuples, subspaces and bases; matrix transformations, kernel, range; matrix algebra and determinants. Inner products and orthogonality. Eigenvalues, diagonalization and applications. Emphasis throughout this course will be on the computational aspects (and not on theoretical aspects).

Precludes additional credit for Mathematics 69.112, 69.114★, 69.119★.

Prerequisite: an OAC in Algebra and Geometry, or Mathematics 69.017★ (or equivalent).

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

**Note:** A grade of C- or better in Mathematics 69.117★ is a prerequisite for certain 200-level Mathematics courses.

#### Mathematics 69.119★

##### **Linear Algebra: With Applications to Business and Economics**

Algebraic concepts, systems of linear equations, vector algebra; matrix algebra, rank, inversion, determinants; linear programming — geometric approach, simplex method, etc. Applications in the fields of business and economics.

Precludes additional credit for Mathematics 69.112, 69.114★, 69.117★, and for Mathematics 69.132★ (Architecture 79.201★).

Prerequisite: An OAC in Algebra and Geometry, or Mathematics 69.017★ (or equivalent).

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

#### Mathematics 69.185★

##### **Discrete Structures I**

An introduction to discrete mathematics and discrete structures. Topics include: propositional and predicate calculus, Boolean algebra, introduction to complexity of algorithms, mathematical reasoning, counting, recurrences, relations, introduction to graphs. (Also listed as Computer Science 95.185★.)



This course is available to Science students only as a free option.  
Prerequisites: Two OACs in Mathematics, and one of Computer Science 95.105★ or 95.107★ (which may be taken concurrently).  
Lectures three hours a week.

Mathematics 69.204★

**Multivariable Calculus for Engineering Students**

Fourier series; expansions for even and odd functions; half-range expansions. Surfaces in  $R^3$ . Differential calculus of functions of several variables. Extrema and Lagrange multipliers. Exact differentials. Line integrals. Double integrals; polar coordinates; applications. Triple integrals; cylindrical and spherical coordinates; applications.

Restricted to students in the Faculty of Engineering.

Precludes additional credit for: Mathematics 69.201, 69.202, 69.208★, 69.209★ and 70.200.

Prerequisites: (i) Mathematics 69.105★ or 69.207★; and (ii) Mathematics 69.114★ or 69.117★; or permission of the School.

Lectures three hours a week, tutorial one hour a week.

Mathematics 69.207★

**Elementary Calculus II**

Further techniques of integration, improper integrals, polar coordinates, parametric equations, indeterminate forms, sequences and series, Taylor's formula and series, first order and linear differential equations.

Precludes additional credit for Mathematics 69.102, 69.105★, and for 69.201, 69.202.

Prerequisites: (i) Mathematics 69.104★, or a grade of C- or better in Mathematics 69.107★ or 69.109★; and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★, or permission of the School.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

Mathematics 69.208★

**Intermediate Calculus**

Partial differentiation, chain rule, gradient, line and multiple integrals with applications, transformations, implicit and inverse function theorems.

Precludes additional credit for Mathematics 69.204★, 69.209★, 70.200, and for 69.201, 69.202.

Prerequisites: Mathematics 69.102 or 69.207★, and 69.112 or 69.117★.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

Mathematics 69.209★

**Intermediate Calculus for Science Students**

Differential equations; differential calculus of functions of several variables; multiple integration; introduction to Fourier series.

Precludes additional credit for Mathematics 69.201, 69.202, 69.204★, 69.208★ and 70.200.

Prerequisites: (i) Mathematics 69.207★, or 69.102; and (ii) Mathematics 69.117★ or 69.114★ or 69.112; or their equivalents, or permission of the School.

Lectures three hours a week, tutorial one hour a week.

Mathematics 69.217★

**Linear Algebra II**

Finite-dimensional vector spaces (over  $R$  and  $C$ ), subspaces, linear independence and bases. Linear transformations and matrices. Inner product spaces (over  $R$  and  $C$ ); Orthonormal bases. Eigenvalues and diagonalization. Bilinear and quadratic forms; principal axis theorem.

Precludes additional credit for Mathematics 69.112.

Prerequisites: (i) Mathematics 69.114★, or a grade of C- or better in Mathematics 69.117★ or 69.119★; and (ii) a grade of C- or better in Mathematics 69.107★ or equivalent; or permission of the School.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour tutorial.

Mathematics 69.218★

**Abstract Algebra I**

Sets and relations, number theory, group theory, ring theory, cardinal numbers.

Precludes additional credit for Mathematics 69.311★ and 70.210.

Prerequisite: Mathematics 69.112 or 69.217★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.241★

**Mathematical Methods for Scientists**

Complex numbers; phasors. Invariance principles: symmetries, rotations, translations, reflections; groups and applications. Probability and statistics with applications to experimental data. Fourier series; standard partial differential equations in science.

Prerequisites: (i) Mathematics 69.102 (or 69.207★), 69.112 (or 69.217★); and 69.208★ (previously or concurrently); and (ii) Physics 75.101★ and 75.102★ (or a grade of B- or better in Physics 75.105).

Lectures three hours a week and one hour tutorial.

Mathematics 69.244★

**Ordinary Differential Equations I**

Ordinary differential equations; applications; special first and second order types. Linear homogeneous and non-homogeneous equations with constant coefficients; variation of parameters; simple harmonic motion. Special linear equations with variable coefficients. Series solutions about ordinary points.

Precludes additional credit for Mathematics 69.105★, 69.201, 69.202, 70.244★ and 70.260.

Prerequisites: Mathematics 69.102 and 69.112 (or 69.117★ and 69.207★).

Lectures three hours a week and one hour tutorial.

Mathematics 69.257★

**Introduction to Statistics**

Data analysis; introduction to probability theory; some standard discrete and continuous distributions such as the binomial, Poisson, hypergeometric, normal,  $t$ , and chi-square; their application to interval estimation and significance testing; simple linear regression and correlation, contingency tables; testing for goodness-of-fit. Computational aspects of statistics.

Precludes additional credit for Mathematics 69.266★, 69.352★, Economics 43.220 and Geography 45.206★.

Prerequisite: Mathematics 69.107★ or equivalent (may be taken concurrently) or permission of the School.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour laboratory.

**Note:** See **Note**, p. 332, under Graduation Regulations, regarding Economics 43.220.

Mathematics 69.259★

**Computational Statistics**

Exploratory data analysis, non-parametric methods, linear regression and correlation, basic experimental designs, related topics. Computer packages are used for statistical analyses.

Precludes additional credit for Mathematics 69.267★, 70.259★, and Economics 43.220.

Prerequisites: (i) Mathematics 69.257★ and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★; or equivalents; or permission of the School.

See *Deferred Final Examinations Note*, p. 338.

Lectures three hours a week and one hour laboratory.

**Note:** See **Note**, p. 332, under Graduation Regulations, regarding Economics 43.220.

Mathematics 69.265★

**Probability Models**

Introductory probability theory. Introduction to stochastic modeling, Markov chains and queueing theory. Random number generation and Monte Carlo simulation. Statistical methods for fitting and evaluating models; estimation and testing. Applications to computer system performance evaluation, analysis of algorithms, reliability, search and decision problems.

Restricted to students in the Bachelor of Computer Science, Computer Mathematics and Computer Statistics programs.

Precludes additional credit for Mathematics 69.352★, 70.260 and 70.265★.

Prerequisites: Mathematics 69.207★ (or 69.102) and 69.114★ (or 69.117★).

Lectures three hours a week and one hour tutorial.



**Mathematics 69.266★****Business Statistics I**

Introduction to statistical computing; probability concepts; descriptive statistics; estimation and testing of hypotheses. Emphasis on the development of an ability to interpret results of statistical analyses with applications from business.

Restricted to students in the School of Business.

Precludes additional credit for Mathematics 69.257★, 69.352★, Economics 43.220 and Geography 45.206★.

Prerequisites: either: item (iii); or both of items (i) and (ii):

(i) Mathematics 69.109★ with a grade of C- or better; and

(ii) an OAC in Algebra and Geometry, or Mathematics 69.017★;

(iii) Business 42.173 with a grade of C- or better; or equivalents.

Lectures three hours a week and one hour laboratory.

**Mathematics 69.267★****Business Statistics II**

Topics include: experimental design, multiple regression and correlation analysis, covariance analysis, and introductory time series. Use of computer packages.

Restricted to students in the School of Business.

Precludes additional credit for Mathematics 69.259★, 70.259★ and Economics 43.220.

Prerequisite: Mathematics 69.266★.

Lectures three hours a week and one hour laboratory.

**Mathematics 69.304★****Boundary Value Problems**

Laplace transforms. Differential equations; solution in series; the formulation of boundary value problems in mechanics, heat conduction, etc.; the method of separation of variables; eigenfunctions and eigenvalues; Fourier series; Bessel and Legendre functions and applications.

This course may be taken for credit as a 300-level Honours Mathematics course, by students in any Honours program in the School of Mathematics and Statistics.

Precludes additional credit for Mathematics 69.375★, Physics 75.388★ and 75.386.

Prerequisites: Mathematics 69.201, or 69.202; or (i) Mathematics 69.244★ or 69.105★, and (ii) Mathematics 69.204★ or 69.208★ or 69.209★; or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.307★****Functions of a Complex Variable**

Analytic functions, contour integration, residue calculus, conformal mapping. Intended for non-engineering students.

Precludes additional credit for Mathematics 69.376★, 70.307★, Physics 75.387★ and 75.386.

Prerequisite: One of Mathematics 69.201, 69.202, 69.204★, 69.208★ or 69.209★, or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.309★****Introductory Analysis**

The real number system, sequences and series, functions of a single real variable, derivatives, the definite integral, uniform convergence.

Precludes additional credit for Mathematics 70.200.

Prerequisite: One of Mathematics 69.201, 69.202, 69.204★, 69.208★, 69.209★, or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.311★****Algebraic Structures with Computer Applications**

Introduction to algebraic structures: groups, rings, fields, lattices, and Boolean algebras; with applications of interest to students in Computer Science.

This course may not be used to meet the 300-level course requirements in any Major or Honours program in Mathematics and Statistics.

Precludes additional credit for Mathematics 69.218★ and 70.210.

Prerequisite: Mathematics 69.217★, or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.317★****Linear Algebra III**

Similarity and unitary triangularization of matrices. Direct methods of solving a system of linear equations. Iterative techniques. Bounds for eigenvalues. Power method and deflation techniques of approximation. The emphasis of the course is primarily on computational aspects.

Prerequisites: (i) a grade of C- or better in Mathematics 69.112 or 69.217★; and (ii) credit in Mathematics 69.102 or 69.207★; or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.318★****Abstract Algebra II**

Groups and rings. Permutations. Finite symmetry groups. Polynomials, unique factorization domains. Quotient rings, ideals. Field extensions, finite fields. Polynomial equations. Geometric constructions - three famous problems: duplication of the cube; trisection of an arbitrary angle; quadrature of the circle.

Precludes additional credit for Mathematics 70.310.

Prerequisite: Mathematics 69.218★, or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.325★****Euclidean Geometry and its Groups**

Transformations of the Euclidean plane (isometries, similarities); solutions of geometric problems using these transformations; groups of symmetries of finite plane figures, frieze patterns, and regular polyhedra; inversion and the extension to the inversive plane; problems solved using inversion; orthogonal circles and pencils of coaxial circles.

Prerequisite: Mathematics 69.218★.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.326★****Plane Projective Geometry**

Axioms of Desarguesian geometry, principle of duality; projectivities, perspectivities, and the fundamental theorem; collineations (homologies and elations); correlations (polarities and conics); algebraic model; introduction to finite projective planes.

Precludes additional credit for Mathematics 70.326★.

Prerequisite: Mathematics 69.218★.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.344★****Ordinary Differential Equations II**

Series solutions of ordinary differential equations of second order about regular singular points; asymptotic solutions. Systems of ordinary differential equations of first order; matrix methods. Existence and uniqueness theorems. Nonlinear autonomous systems of order 2; qualitative theory. Numerical solutions of ordinary differential equations.

Precludes additional credit for Mathematics 70.308★.

Prerequisites: Mathematics 69.244★, 69.208★; and 69.112 or 69.217★.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.352★****Probability and Statistics**

Axioms of probability; conditional probability and independence; random variables; distributions: binomial, Poisson, hypergeometric, normal, gamma; central limit theorem; sampling distributions; point estimation: maximum likelihood, and method of moments; confidence intervals; testing of hypotheses: one and two populations; engineering applications: acceptance sampling, control charts, reliability.

Restricted to students in the Faculty of Engineering.

This course may not be used to meet the 300-level course requirements in any Major or Honours program in Mathematics and Statistics.

Precludes additional credit for Mathematics 69.257★, 69.265★, 69.266★, Economics 43.220 and Geography 45.206★.

Prerequisite: Mathematics 69.204★, or 69.201.

Lectures three hours a week and one hour laboratory.



**Mathematics 69.353 ★**

**Regression Analysis**

Review of simple and multiple regression with matrices, Gauss-Markov theorem, polynomial regression, indicator variables, residual analysis, weighted least squares, variable selection techniques, nonlinear regression, correlation analysis and autocorrelation. Computer packages are used for statistical analyses.

Precludes additional credit for Mathematics 70.355 ★, Economics 43.476 ★, and for Mathematics 69.351; Psychology 49.300 is precluded for additional credit for students registered in a Mathematics program.

Prerequisites: (I) Mathematics 69.259 ★ or 69.267 ★, or Economics 43.220, or equivalent; and (II) Mathematics 69.112 or 69.117 ★ or 69.119 ★ or equivalent; or permission of the School. Lectures three hours a week and one hour laboratory.

**Mathematics 69.354 ★**

**Analysis of Variance and Experimental Design**

Single and multifactor analysis of variance, orthogonal contrasts and multiple comparisons, analysis of covariance; nested, crossed and repeated measures designs; completely randomized, randomized block, Latin squares, factorial experiments, related topics. Computer packages are used for statistical analyses.

Precludes additional credit for Mathematics 70.355 ★, and for Mathematics 69.351; Psychology 49.300 is precluded for additional credit for students registered in a Mathematics program. Prerequisite: Mathematics 69.353 ★ or permission of the School. Lectures three hours a week and one hour laboratory.

**Mathematics 69.357 ★**

**Sampling Methodology**

The sample survey as a vehicle for information collection in government, business, scientific and social agencies. Topics include: planning a survey, questionnaire design, simple random, stratified, systematic and cluster sampling designs, estimation methods, problem of non-response, related topics.

Prerequisite: One of Mathematics 69.257 ★, or 69.259 ★, 69.266 ★, 69.267 ★, Economics 43.220 or equivalent; or permission of the School.

Lectures three hours a week and one hour laboratory.

**Mathematics 69.358 ★**

**Elements of Probability Theory**

Discrete and continuous distributions; moment-generating functions, marginal and conditional distributions, transformation theory, limiting distributions.

Precludes additional credit for Mathematics 69.350, 70.350, and 70.358 ★.

Prerequisites: (I) Mathematics 69.208 ★ [or one of 69.201, 69.202, 69.204 ★, or 69.209 ★]; and (II) one of Mathematics 69.257 ★, 69.266 ★, Economics 43.220; or permission of the School.

Lectures three hours a week, tutorial one hour a week.

**Mathematics 69.359 ★**

**Mathematical Statistics**

Point and interval estimation, sufficient statistics, hypothesis testing, chi-square tests with enumeration data.

Precludes additional credit for Mathematics 69.350, 70.350, and 70.359 ★.

Prerequisite: Mathematics 69.358 ★ or permission of the School.

Lectures three hours a week, tutorial one hour a week.

**Mathematics 69.375 ★**

**Mathematical Methods I**

Laplace transforms, Fourier series and Fourier transforms, solutions of partial differential equations of mathematical physics, boundary value problems, applications.

Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.304 ★, Physics 75.388 ★, and 75.386.

Prerequisite: Mathematics 69.201 or 69.202; or (I) Mathematics 69.244 ★ or 69.105 ★, and (II) Mathematics 69.204 ★ or 69.208 ★ or 69.209 ★; or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.376 ★**

**Mathematical Methods II**

Analytic functions, contour integration, residues, applications. Matrix theory, eigenvalues, diagonalization of symmetric matrices, applications.

Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.307 ★, 70.307 ★, Physics 75.387 ★, and 75.386.

Prerequisite: Mathematics 69.201.

**Mathematics 69.381 ★**

**Linear Programming**

Formulation of linear programming problems, the simplex method, duality theory, implementations, extensions and applications. Network flow problems and the network simplex method.

Precludes additional credit for Economics 43.404 ★, Engineering 94.320 ★.

Prerequisite: Mathematics 69.112 or 69.217 ★, or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.384 ★**

**Design and Analysis of Algorithms I**

An introduction to the design and analysis of algorithms. Topics include: recurrence relations, sorting and searching, divide-and-conquer, dynamic programming, greedy algorithms, amortized analysis. (Also listed as Computer Science 95.384 ★.)

Prerequisites: Computer Science 95.202 ★ and 95.285 ★ or equivalent.

Lectures three hours a week.

**Mathematics 69.386 ★**

**Numerical Analysis**

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. (Also listed as Computer Science 95.386 ★.)

Prerequisites: (I) Mathematics 69.102, 69.105 ★ or 69.207 ★ (or 69.201 or 69.202); and (II) Mathematics 69.112 or 69.217 ★; and (III) knowledge of a computer language.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.387 ★**

**Mathematical Software**

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g., linear systems, non-linear systems, optimization, or differential equations. (Also listed as Computer Science 95.387 ★.)

Prerequisite: Mathematics 69.386 ★.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.389 ★**

**Computational Number Theory**

This course treats a number of topics from elementary number theory in a computational and algorithmic way. The topics are chosen from: primality testing, factorization of integers and polynomials, solution of diophantine equations, approximation of irrationals by rationals.

Prerequisites: Mathematics 69.218 ★ or 69.311 ★ or 70.210; knowledge of a computer language.

Lectures three hours a week and one hour tutorial.

**Mathematics 69.397 ★**

**Directed Studies**

Available only to students whose program requires a 0.5 credit not offered by the School of Mathematics and Statistics.

**Mathematics Courses for Honours Students**

**Mathematics 70.200**

**Calculus and Introductory Analysis**

Higher dimensional calculus, chain rule, gradient, line and multiple integrals with applications. Use of implicit and inverse function theorems. Real number axioms, limits, continuous functions, differentiability, infinite series, uniform convergence, the Riemann integral.



Precludes additional credit for Mathematics 69.204★, 69.208★, 69.209★, 69.309★, and for 69.201, 69.202.

Prerequisites: (I) Mathematics 69.102 or 69.207★; and (II) Mathematics 69.112 or 69.117★; or permission of the School.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.210

##### Algebra

Set theory, algebraic systems, vector spaces, inner product spaces, linear transformations, determinants, quadratic forms, selected applications.

Precludes additional credit for Mathematics 69.218★ or 69.311★.

Prerequisite: Mathematics 69.112 or 69.217★.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.220★

##### Co-operative Work Term Report 1

On completion of the work term, the student must submit to the School of Mathematics and Statistics a written report of two to three pages on the work performed. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Co-operative Education Option of an Honours program offered by the School of Mathematics and Statistics, and permission of the School.

#### Mathematics 70.244★

##### Ordinary Differential Equations

Ordinary differential equations of the first and second order, existence and uniqueness of solutions; numerical solutions, error analysis; linear systems of first order; difference equations; higher order linear equations. Modelling with differential equations. A mathematical computer software package will be used.

Precludes additional credit for Mathematics 69.105★, 69.201, 69.202, 69.244★, 70.260.

Prerequisites: Mathematics 69.102 (or 69.207★) and 69.112 (or 69.217★).

Lectures three hours a week, tutorial one hour a week.

#### Mathematics 70.259★

##### Statistics: Theory and Practice

Computational and inferential statistics; basic distributions (normal, *t*, chi-square, *F*); maximum likelihood and moment estimators; properties of estimators; confidence intervals (one- and two-sample procedures); testing of simple and composite hypotheses; regression and analysis of variance models; non-parametric procedures; contingency tables. Use of computer packages.

Precludes additional credit for Mathematics 69.259★, 69.267★, Economics 43.220.

Prerequisite: Mathematics 70.265★ or 70.260.

Lectures three hours a week and one hour tutorial/laboratory.

#### Mathematics 70.265★

##### Introduction to Probability with Applications

Axioms of probability, basic combinatorial analysis, conditional probability and independence, discrete and continuous random variables, joint and conditional distributions, expectation, central limit theorem, sampling distributions, simulation and applications to descriptive statistics. A statistical software package will be used.

Precludes additional credit for Mathematics 69.265★ and 70.260.

Prerequisites: Mathematics 69.102 (or 69.207★) and 69.112 (or 69.217★).

Lectures three hours a week, tutorial one hour a week.

#### Mathematics 70.297★

##### Directed Studies

Available only to Honours students whose program requires a half credit not offered by the School of Mathematics and Statistics.

#### Mathematics 70.301★

##### Real Analysis

Metric spaces; limits, continuity, open and closed sets, compactness, connectedness and completeness. Uniform convergence of sequences of functions, as convergence in metric spaces of bounded and continuous functions. Weierstrass approximation theorem. Contraction mappings and applications to integral and differential equations.

Prerequisite: Mathematics 70.200 or permission of the School. Lectures three hours a week and one hour tutorial.

#### Mathematics 70.302★

##### Advanced Calculus

Vector fields on surfaces. The functions *div*, *curl* and *grad*. Line and surface integrals. The divergence theorem and Stokes' theorem. Exterior algebra. Stokes' formula. Functions of bounded variation. The Riemann-Stieltjes integral.

Prerequisite: Mathematics 70.200 or permission of the School.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.307★

##### Functions of a Complex Variable

Analytic functions, contour integration, residue calculus, conformal mapping.

Precludes additional credit for Mathematics 69.307★, 69.376★, Physics 75.387★, and 75.386.

Prerequisite: Mathematics 70.200 or permission of the School.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.308★

##### Ordinary Differential Equations

Analytic ordinary differential equations: series solutions of ordinary differential equations about ordinary and regular singular points. Asymptotic solutions. Sturm-Liouville theory. Bessel and Legendre functions. Fourier series.

Precludes additional credit for Mathematics 69.344★, Physics 75.388★, and 75.386.

Prerequisites: Mathematics 70.200; and 70.244★ or 70.260.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.310

##### Modern Algebra

Graphs, groups, rings, integral domains, fields; polynomial domains and linear algebra with applications to enumeration problems, optimization of combinatorial problems, coding theory.

Precludes additional credit for Mathematics 69.310 and 69.318★.

Prerequisite: Mathematics 70.210 or permission of the School.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.320★

##### Co-operative Workterm Report 2

On completion of the work term, the student must submit to the School of Mathematics and Statistics a written report of two to three pages on the work performed. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Co-operative Education Option of an Honours program offered by the School of Mathematics and Statistics, and permission of the School.

#### Mathematics 70.321★

##### Co-operative Workterm Report 3

On completion of the work term, the student must submit to the School of Mathematics and Statistics a written report of two to three pages on the work performed. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Co-operative Education Option of an Honours program offered by the School of Mathematics and Statistics, and permission of the School.

#### Mathematics 70.326★

##### Foundations of Projective Geometry

Definition of a general projective plane and immediate consequences; finite planes (combinatorial results, sub-planes, incidence matrices) and planar ternary rings; collineations, role of Desargues' configuration, examples of types of planes.

Precludes additional credit for Mathematics 69.326★.

Prerequisite: Mathematics 70.210.

Lectures three hours a week and one hour tutorial.

#### Mathematics 70.336★

##### Elements of Set Theory

Axioms of set theory. Development of the systems of natural numbers and the real numbers. Axiom of choice, Zorn's lemma, well-ordering. The Schröder-Bernstein theorem, cardinal numbers, ordinal numbers, transfinite induction, cardinal and ordinal arithmetics.

Prerequisite: Mathematics 70.210 or permission of the School.

Lectures three hours a week and one hour tutorial.



**Mathematics 70.345★****Classical Mechanics**

Axiomatic approach to Newtonian mechanics. Simple harmonic motion. One- and two-dimensional projectiles. Central forces; planetary orbits. Systems of particles; collision problems. Moments and products of inertia; two-dimensional rigid body motions. Generalized coordinates; Lagrange's equation. Moving axes; motion near the surface of the earth.

Precludes additional credit for Mathematics 69.345★.

Prerequisites: Mathematics 70.200 (or 69.208★); and 70.244★ or 70.260 (or 69.244★).

Lectures three hours a week and one hour tutorial.

**Mathematics 70.346★****Autonomous Dynamical Systems**

Basic concepts of dynamical systems. Stability; limit cycles; Lyapunov's direct method. Theory of autonomous dynamical systems. Volterra systems; principle of competitive exclusion in population biology. The threshold theorem of epidemiology. Basic concepts of nonequilibrium statistical mechanics.

Prerequisites: Mathematics 70.200; and 70.244★ or 70.260.

Lectures three hours a week and one hour tutorial.

**Mathematics 70.355★****Regression and Experimental Design**

Linear regression - theory and methods; design of experiments - analysis of the completely randomized, randomized block and Latin square designs; multiple comparisons; factorial experiments; related topics.

Precludes additional credit for Mathematics 69.353★, 69.354★, Economics 43.476★, and for 69.351. Psychology 49.300 is precluded for additional credit for students registered in a Mathematics program.

Prerequisites: (i) Mathematics 70.259★ or 69.259★; and (ii) 69.112 or 69.217★; and (iii) 70.359★ or 69.359★ (which may be taken concurrently); or permission of the School.

Lectures three hours a week and one hour laboratory.

**Mathematics 70.356★****Stochastic Processes and Queueing Theory**

Stochastic modelling, Markov chains, birth and death processes, renewal theory. Queueing theory: analytical and simulation methods. Applications to computer systems, operations research and social sciences.

Prerequisites: Mathematics 70.260 or 70.265★; or a GPA of 6.0 or better over all three of the courses Mathematics 69.208★, 69.217★ (or 69.112), and 69.265★; or permission of the School.

Lectures three hours a week and one hour tutorial.

**Mathematics 70.358★****Elements of Probability Theory**

Random variables and moment-generating functions, concepts of conditioning and correlation; laws of large numbers, central limit theorem; multivariate normal distribution; distributions of functions of random variables, sampling distributions, order statistics.

Precludes additional credit for Mathematics 69.358★, 69.350, 70.350.

Prerequisites: (i) Mathematics 70.265★ (or 69.265★ or 70.260); and (ii) Mathematics 70.200 (or a grade of C+ or better in 69.208★); or permission of the School.

Lectures three hours a week, tutorial one hour a week.

**Mathematics 70.359★****Mathematical Statistics**

Empirical distribution functions, Monte Carlo methods, elements of decision theory, point estimation, interval estimation, tests of hypotheses, robustness, nonparametric methods.

Precludes additional credit for Mathematics 69.350, 69.359★, 70.350.

Prerequisite: Mathematics 70.358★ or permission of the School.

Lectures three hours a week, tutorial one hour a week.

**Mathematics 70.385★****Discrete Structures and Applications**

Enumeration: elementary methods, inclusion and exclusion, recurrence relations, generating functions and applications. Graph theory and algorithms: connectivity, planarity, Hamilton and Euler

paths. Error-correcting codes. (Also listed as Computer Science 95.385★.)

Prerequisite: One of Mathematics 69.218★, 69.311★, or 70.210.

Lectures three hours a week and one hour tutorial.

**Mathematics 70.390★****Mathematical Problem Solving**

Techniques of mathematical problem solving, including: pattern recognition, symmetry exploitation, case by case analysis, context recognition, arguments by contradiction, counting arguments, extreme case analysis, equivalent problem formulation, solution by generalization. Problems chosen from: analysis, number theory, geometry, algebra, probability, combinatorics, graph theory.

This course is normally restricted to Honours students in Mathematics and Statistics.

Prerequisites: At least two credits from: Mathematics 70.200, 70.210, 70.244★ and 70.265★ (or 70.260) or permission of the School.

*A selection of courses in the 400 series will be offered.*

**Mathematics 70.401★****Vector Calculus**

Linear transformations, multiple integrals, differential forms, vector functions and fields, vector calculus, applications.

Prerequisite: Mathematics 70.302★ or permission of the School.

Lectures three hours a week.

**Mathematics 70.403★****Functional Analysis**

Banach spaces and bounded linear operators, Hahn-Banach extension and separation, dual spaces, bounded inverse theorems, uniform boundedness principle, applications. Compact operators. Differential calculus in Banach spaces, inverse and implicit function theorems and their application to differential equations. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.508, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or permission of the School.

Lectures three hours a week.

**Mathematics 70.407★****Measure and Integration Theory**

Lebesgue measure and integration on the real line; sigma algebras and measures; integration theory;  $L_p$  spaces; Fubini's theorem; decomposition theorems and Radon-Nikodym derivatives. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.507, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or 70.302★ or permission of the School.

Lectures three hours a week.

**Mathematics 70.415★****Rings and Modules**

Fundamental concepts in rings and modules, structure theorems, applications.

Prerequisite: Mathematics 70.310 or permission of the School.

Lectures three hours a week.

**Mathematics 70.416★****Group Theory**

Fundamental principles as applied to abelian, nilpotent, solvable, free and finite groups; representations.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.516, for which additional credit is precluded.

Prerequisite: Mathematics 70.310 or permission of the School.

Lectures three hours a week.

**Mathematics 70.417★****Commutative Algebra**

Fields, including algebraic and transcendental extensions, Galois theory, valuation theory; Noetherian commutative rings, including Noether decomposition theorem and localization.

Prerequisite: Mathematics 70.310 or permission of the School.

Lectures three hours a week.



**Mathematics 70.418★****Homological Algebra and Category Theory**

Axioms of set theory; categories, functors, natural transformations; free, projective, injective and flat modules; tensor products and homology functors, derived functors; dimension theory. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.518, for which additional credit is precluded.

Prerequisite: Mathematics 70.310 or permission of the School.  
Lectures three hours a week.

**Mathematics 70.420★****Co-operative Workterm Report 4**

On completion of the work term, the student must submit to the School of Mathematics and Statistics a written report of two to three pages on the work performed. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Co-operative Education Option of an Honours program offered by the School of Mathematics and Statistics, and permission of the School.

**Mathematics 70.421★****Co-operative Workterm Report 5**

On completion of the work term, the student must submit to the School of Mathematics and Statistics a written report of two to three pages on the work performed. Graded *Sat* or *Uns*.

Prerequisites: Registration in the Co-operative Education Option of an Honours program offered by the School of Mathematics and Statistics, and permission of the School.

**Mathematics 70.425★****Introduction to General Topology**

Topological spaces, maps, subspaces, product and identification topologies, separation axioms, compactness, connectedness. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.525, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.426★****Introduction to Algebraic Topology**

An introduction to homotopy theory. Topics include the fundamental group, covering spaces and the classification of two-dimensional manifolds. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.526, for which additional credit is precluded.

Prerequisites: Mathematics 70.310 and 70.425★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.427★****Foundations of Geometry**

A study of at least one modern axiom system of Euclidean and non-Euclidean geometry, embedding of hyperbolic and Euclidean geometries in the projective plane, groups of motions, models of non-Euclidean geometry.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the School.  
Lectures three hours a week.

**Mathematics 70.428★****Introduction to Differentiable Manifolds**

A study of differentiable manifolds from the point of view of either differential topology or differential geometry. Topics such as smooth mappings, transversality, intersection theory, vector fields on manifolds, Gaussian curvature, Riemannian manifolds, differential forms, tensors and connections are included.

Prerequisite: Mathematics 70.301★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.435★****Analytic Number Theory**

Dirichlet series, characters, Zeta-functions, prime number theorem, Dirichlet's theorem on primes in arithmetic progressions, binary quadratic forms. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.535, for which additional credit is precluded.

Prerequisite: Mathematics 70.307★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.436★****Algebraic Number Theory**

Algebraic number fields, bases, algebraic integers, integral bases, arithmetic in algebraic number fields, ideal theory, class number. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.536, for which additional credit is precluded.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the School.  
Lectures three hours a week.

**Mathematics 70.445★****Analytical Dynamics**

Dynamics of a rigid body in three dimensions. Euler angles. Inertia tensor, Euler's equations of motion. Hamilton's equations. Canonical transformation. Hamilton-Jacobi theory. Theory of small oscillations.

Prerequisite: Mathematics 70.345★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.446★****Hydrodynamics and Elasticity**

Properties of Cartesian tensors; fundamental laws; motion of fluids (perfect and viscous); elastic materials.

Prerequisites: Mathematics 70.307★, 70.345★ and 70.346★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.447★****Tensor Analysis and Relativity Theory**

Development of tensor analysis, application to Riemannian spaces and relativity theory.

Prerequisites: Mathematics 70.345★ and 70.346★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.450★****Parametric Estimation**

Preliminaries on probability theory; exact and asymptotic sampling distributions; unbiasedness, consistency, efficiency, sufficiency and completeness; properties of maximum likelihood estimators; least squares estimation of location and scale parameters based on order statistics and sample quantiles; Best Asymptotically Normal (BAN) estimators.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.560, for which additional credit is precluded.

Prerequisite: Mathematics 70.350 or 70.359★ or permission of the School.

Lectures three hours a week.

**Mathematics 70.451★****Probability Theory**

Introduction to probability, characteristic functions, probability distributions, limit theorems.

Prerequisites: Mathematics 70.356★ and 70.358★ or permission of the School.  
Lectures three hours a week.

**Mathematics 70.452★****Survey Sampling**

Basic concepts in sampling from finite populations; simple random sampling; stratified sampling; choice of sampling unit; cluster and systematic sampling; introduction to multistage sampling; ratio estimation; sampling with unequal probabilities and with replacement; replicated sampling; related topics.

Prerequisites: (i) Mathematics 70.259★ or 69.259★; and (ii) either 70.359★ (or 70.350) or a grade of C+ or better in 69.359★ (or 69.350); or permission of the School.

Lectures three hours a week.

**Mathematics 70.453★****Applied Multivariate Analysis**

Selected topics in regression and correlation non-linear models. Multivariate statistical methods, principal components, factor



analysis, multivariate analysis of variance, discriminant analysis, canonical correlation, analysis of categorical data. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.559, for which additional credit is precluded. Prerequisites: Mathematics 70.355★; or 69.359★ (or 69.350) and 69.354★; or permission of the School. Lectures three hours a week.

#### Mathematics 70.456★

##### Non-Parametric Methods

Order statistics; rank statistics; permutations; asymptotics; hypothesis of randomness; stochastic ordering; Wilcoxon test; median test; Kolmogorov-Smirnov test; hypothesis of symmetry and random blocks; independence hypothesis; treatment of ties; power and efficiency. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.556, for which additional credit is precluded. Prerequisite: Mathematics 70.359★ (or 70.350) or permission of the School.

Lectures three hours a week.

#### Mathematics 70.457★

##### Statistical Inference

Sufficient statistics, simple and composite hypotheses, most powerful and similar region test, distribution-free tests, confidence intervals, goodness-of-fit and likelihood ratio tests, large sample theory, Bayesian and likelihood methods, sequential tests. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.551, for which additional credit is precluded.

Prerequisite: Mathematics 70.450★ or permission of the School. Lectures three hours a week.

#### Mathematics 70.458★

##### Stochastic Models

Review of discrete Markov chains and Poisson processes; pure jump Markov processes including the Q-matrix approach; the Kolmogorov equations; classification of states; stationary and limiting distributions; renewal theory. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.571, for which additional credit is precluded.

Prerequisite: Mathematics 70.356★ or permission of the School. Lectures three hours a week.

#### Mathematics 70.459★

##### Advanced Mathematical Modelling

Real life situations in the physical, social, and life sciences are often modelled using mathematical tools. This course will examine various models and techniques used in their analysis, e.g., matrix procedures in connection with population models. Students will use a computer package to obtain numerical results. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.561, for which additional credit is precluded.

Prerequisites: Mathematics (I) 70.244★ and 70.265★ (or 70.260; or 69.244★ and 69.265★) and (II) 70.356★; or permission of the School.

Lectures three hours a week.

#### Mathematics 70.460★

##### Case Studies in Operations Research

Applications of the principles of Operations Research to practical problems in business, management, and science. Students present at least one case and analyze cases in the published literature. Cases may also be presented by visiting practitioners.

**Note:** this course is designed for students in their final year in Honours Operations Research. Students in Honours Mathematics/Statistics programs may only take this course as a free option.

Prerequisites: Mathematics 69.259★ (or 70.259★) and 69.381★; or permission of the School. Seminars three hours a week.

#### Mathematics 70.470★

##### Partial Differential Equations

First order linear, quasi-linear, and non-linear equations; second order equations in two and more variables; systems of equations; the wave equation; Laplace and Poisson equations, Dirichlet and Neumann problems; Green's functions. Also offered at the graduate

level, with additional or different requirements, as Mathematics 70.546, for which additional credit is precluded.

Prerequisites: Mathematics 70.308★ and one of 70.302★ or 70.307★ or permission of the School.

Lectures three hours a week.

#### Mathematics 70.471★

##### Topics in Partial Differential Equations

Theory of distributions, initial-value problems based on 2-dimensions wave equations, Laplace transform, Fourier integral transform, diffusion problems, Helmholtz equation with application to boundary and initial-value problems in cylindrical and spherical coordinates. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.547, for which additional credit is precluded.

Prerequisites: Mathematics 70.308★ and one of 70.302★ or 70.307★ or permission of the School.

Lectures three hours a week.

#### Mathematics 70.472★

##### Integral Transforms

Laplace, Fourier, Hankel and Mellin transforms, selection of a suitable transform for a given partial differential equation boundary value problem. Operational properties of transforms. Inversion theorems. Approximate evaluation of inversion integrals for small and large values of parameter. Application to the solution of integral equations.

Prerequisite: Mathematics 70.307★ or permission of the School. Lectures three hours a week.

#### Mathematics 70.473★

##### Qualitative Theory of Ordinary Differential Equations

Ordinary differential equations: existence-uniqueness theorems, vector formulation for systems; stability theory, Lyapunov theorems, perturbation theorems and structural stability; Poincaré-Bendixon theory.

Prerequisites: Mathematics 70.301★, 70.308★, 70.346★.

Lectures three hours a week.

#### Mathematics 70.481★

##### Topics in Combinatorics

An in-depth study of one or more topics from: generating functions, Polya's theory of counting, block designs, coding theory, partially ordered sets and Ramsey theory.

Prerequisites: Mathematics 70.210 and 70.385★ or permission of the School.

Lectures three hours a week.

#### Mathematics 70.482★

##### Introduction to Mathematical Logic

Symbolic logic, propositional and predicate calculi, set theory and model theory, completeness.

Prerequisite: Mathematics 70.210 or permission of the School.

Lectures three hours a week.

#### Mathematics 70.483★

##### Computable Functions

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic, NP-completeness. (Also listed as Computer Science 95.483★.)

Prerequisite: Mathematics 70.210 or 70.385★ or permission of the School.

Lectures three hours a week.

#### Mathematics 70.485★

##### Theory of Automata

Finite automata and regular expressions, properties of regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. (Also listed as Computer Science 95.485★.) Also offered at the graduate level, with additional or different requirements, as Mathematics 70.565, for which additional credit is precluded.

Prerequisite: Mathematics 70.385★ or 70.310 or permission of the School.

Lectures three hours a week.

**Mathematics 70.486★****Numerical Linear Algebra**

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. (Also listed as Computer Science 95.486★.)

Prerequisites: Mathematics 69.112 or 69.217★; and Mathematics 70.200 or 69.309★, or permission of the School.

Lectures three hours a week.

**Mathematics 70.487★****Game Theory**

Two-person zero-sum games; infinite games; multistage games; differential games; utility theory; two-person general-sum games; bargaining problem; n-person games; games with a continuum of players. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.567, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or permission of the School.

Lectures three hours a week.

**Mathematics 70.488★****Graph Theory and Algorithms**

Paths, circuits, Eulerian and Hamiltonian graphs, connectivity, colouring problems, matching, Ramsey theory, network flows.

Prerequisites: Mathematics 70.385★ or 70.310, or permission of the School.

Lectures three hours a week.

**Mathematics 70.493★****Honours Project**

Consists of a written report on some approved topic or topics in the field of statistics, with a substantial computer component. The written report should consist of 15 to 30 pages, plus documentation.

Prerequisite: Registration in the Honours Computer Statistics program; see p. 334.

**Mathematics 70.494★****Honours Project**

Consists of a written report on the investigation and implementation of mathematical software, including a description of both the theoretical background and of the implementation, and documentation of the implementation. The written report should consist of 15 to 30 pages, plus documentation.

Prerequisite: Registration in the Honours Computer Mathematics program (Information Technology stream); see p. 333.

**Mathematics 70.495★****Honours Project**

Consists of a written report on some approved topic or topics in the field of mathematics, together with a short lecture on the report.

Prerequisite: Honours Mathematics students only, see p. 333.

**Mathematics 70.496★****Directed Studies**

Prerequisite: Honours Mathematics students only.

**Mathematics 70.497★****Directed Studies**

Available only to Honours students whose program requires a half-credit not offered by the School of Mathematics and Statistics.



# Mechanical and Aerospace Engineering (Engineering)

3135 Mackenzie Building  
Telephone: 520-5684  
Fax: 520-5715

## Academic Administration

Chair, Robert Bell

## Teaching Staff

### Professor Emeritus

**J.T. Rogers**, B.Eng., M.Eng., Ph.D. (McGill), F.C.S.M.E., P.Eng.

### Professors

**F.F. Afagh**, B.Sc., M.Sc. (Washington State), Ph.D. (Waterloo), P.Eng. • **R. Bell**, B.Sc., Ph.D. (Queen's of Belfast), P.Eng. • **M.J. Bibby**, M.Sc., Ph.D. (Alberta), P.Eng. • **J. A. Goldak**, B.Sc., M.Sc., Ph.D. (Alberta), P.Eng. • **R.J. Kind**, B.Sc. (Loyola), B.Eng. (McGill), Ph.D. (Cambridge), P.Eng. • **E.G. Plett**, B.A.Sc. (British Columbia), S.M., Sc.D. (Massachusetts Institute of Technology), P.Eng. • **H.I.H. Saravanamuttoo**, B.Sc. (Glasgow), Ph.D. (Bristol), F.C.A.S.I., F.I.Mech.E., F.A.S.M.E., P.Eng. • **J.Z. Sasiadek**, B.Sc. (Warsaw), M.Sc., D.Sc., Ph.D. (Wroclaw), Ing., P.Eng. • **S.A. Sjolander**, B.Eng., M.Eng. (Carleton), Ph.D. (Cambridge), P.Eng. • **D.A. Staley**, B.Sc. (British Columbia), M.A. (Toronto), Ph.D. (Western Ontario) • **P.V. Straznicky**, Dipl. Ing. (Brno), M.Eng. (Toronto), P.Eng. • **C.L. Tan**, B.Sc., Ph.D. (London) • **J-Y Wong**, B.Sc. (Tsing Hua), Ph.D., D.Sc. (Newcastle-upon-Tyne), F.I.Mech.E., F.A.S.M.E., P.Eng., C. Eng.

### Associate Professors

**J.C. Beddoes**, B.Eng., M.Eng., Ph.D. (Carleton), P.Eng. • **F.W. Black**, B.Sc. (M.E.) (Manitoba), M.A.Sc., Ph.D. (Toronto), P.Eng. • **M.J. McDill**, B.Eng., M.Eng., Ph.D. (Carleton), P.Eng. • **W.G. Richarz**, B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng. • **D.L. Russell**, B.Eng. (Technical University of Nova Scotia), M.S., Ph.D. (Massachusetts Institute of Technology) • **M.J. Worswick**, B.A.Sc., M.A.Sc., Ph.D. (Waterloo) • **M.I. Yaras**, B.Sc. (Technical University of Istanbul), M.Eng., Ph.D. (Carleton)

### Assistant Professors

**A.V. Artemev**, M.Sc., Ph.D. (Moscow) • **P.E. Barrington**, B.Eng. (Carleton), Ph.D. (Cambridge) • **J.A. Gaydos**, B.A.Sc., M.A.Sc., Ph.D. (Toronto) • **A.K. Pilkey**, B.A.Sc., M.A.Sc. (Waterloo), Ph.D. (Carleton)

### Adjunct Research Professors

**P.R. Frise** (University of Windsor) • **K.R. Goheen**, Yorkton Securities • **E.S. Hanff**, National Research Council • **C.H. Hersom**, Institute for Space and Terrestrial Sciences • **A. Jablonski**, Canadian Space Agency • **A.K. Koul**, National Research Council • **N.B. McLaughlin**, Agriculture and Agri-food Canada • **J.J. McPhee**, University of Waterloo • **H. Moustapha**, Pratt & Whitney Canada • **T. Mussivand**, University of Ottawa Heart Institute • **F. Nitzsche**, National Research Council • **J. Sinkiewicz**, M.I.T. • **W. Tyson**, Natural Resources Canada • **F. Vigneron**, Canadian Space Agency • **G. Vukovich**, Canadian Space Agency • **W. Wallace**, National Research Council • **J.S. Zhang**, National Research Council

### Adjunct Professors

**M.C. deMalherbe** • **G. Kardos** • **James Kirkhope** • **J.T. Rogers**

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

## Mechanical and Aerospace Core Courses

Engineering 86.201 ★

### Engineering Graphics and Design

Engineering drawing techniques; fits and tolerances; working drawings; fasteners. Elementary descriptive geometry; true length, true view, and intersection of geometric entities; developments. Assignments will make extensive use of Computer-Aided Design (CAD) and will include the production of detail and assembly drawings from actual physical models.

Precludes additional credit for Engineering 91.101★.

Prerequisite: Engineering 91.100★.

Lectures and tutorials two hours a week, laboratory four hours a week.

Engineering 86.211★

### **Engineering Dynamics**

Review of kinematics and kinetics of particles: rectilinear and curvilinear motions; Newton's second law; energy and momentum methods. Kinematics and kinetics of rigid bodies: plane motion of rigid bodies; forces and accelerations; energy and momentum methods.

Precludes additional credit for Engineering 82.211★ or Engineering 91.211★.

Prerequisites: Engineering 91.111★ and Mathematics 69.105★ and 69.114★.

Lectures three hours a week, problem analysis three hours a week.

Engineering 86.222★

### **Mechanics of Solids I**

Review of Principles of Statics; friction problems; Concepts of stress and strain at a point; Statically determinate and indeterminate stress systems; Torsion of circular sections; Bending moment and shear force diagrams; Stresses and deflections in bending; Stress and strain transformations; Buckling instability. Precludes additional credit for Engineering 82.220★.

Prerequisites: Engineering 91.111★, Mathematics 69.105★ and 69.114★.

Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 86.230★

### **Fluid Mechanics I**

Fluid properties. Units. Kinematics, dynamics of fluid motion: concepts of streamline, control volume, steady and one-dimensional flows; continuity, Euler, Bernoulli, steady flow energy, momentum, moment of momentum equations; applications. Fluid statics; pressure distribution in fluid at rest; hydrostatic forces on plane and curved surfaces; buoyancy.

Prerequisites: Mathematics 69.105★, 69.114★ and Engineering 91.111★.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Engineering 86.240★

### **Thermodynamics and Heat Transfer**

Basic concepts of thermodynamics: temperature, work, heat, internal energy and enthalpy. First law of thermodynamics for closed and steady-flow open systems. Thermodynamic properties of pure substances; changes of phase; equation of state. Second law of thermodynamics: concept of entropy. Simple power and refrigeration cycles. Introduction to heat transfer: conduction, convection and radiation.

Precludes additional credit for Engineering 91.241★.

Prerequisites: Chemistry 65.111★, Mathematics 69.105★ and 69.114★.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Engineering 86.270★

### **An Introduction to Engineering Materials**

Materials (metals, alloys, polymers) in engineering service; relationship of interatomic bonding, crystal structure and defect structure (vacancies, dislocations) to material properties; polymers, thermoplastic, thermosetting; phase diagrams and alloys; microstructure control (heat treatment) and mechanical properties; material failure.

Precludes additional credit for Engineering 88.271★ or 82.270★.

Prerequisites: Chemistry 65.111★ and Engineering 82.220★ or 86.222★.

Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 86.304★

### **Dynamics of Machinery**

Kinematic and dynamic analysis of mechanisms and machines. Instant Centres and complex algebra techniques. Synthesis of

mechanisms. Kinematics and Dynamics of Cams. Design and analysis considerations in reciprocating and rotating machinery. Vibrations in machinery. Vibration isolation. Experimental investigation of dynamic systems.

Prerequisite: Engineering 86.211★.

Lectures three hours a week, problem analysis and laboratories one hour a week.

Engineering 86.322★

### **Mechanics of Solids II**

Torsion of non-circular sections; Unsymmetric bending and shear centre; Energy methods; Complex stresses and criteria of yielding; Elementary theory of elasticity; Axisymmetric deformations; Elementary plasticity analysis; Plastic collapse.

Precludes additional credit for Engineering 82.322★.

Prerequisite: Engineering 86.222★.

Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 86.330★

### **Fluid Mechanics II**

Review of control volume analysis. Dimensional analysis and similitude. Compressible flow: isentropic flow relations, flow in ducts and nozzles, effects of friction and heat transfer, normal and oblique shocks, two-dimensional isentropic expansion. Viscous flow theory: hydrodynamic lubrication and introduction to boundary layers.

Precludes additional credit for Engineering 86.333★.

Prerequisites: Mathematics 69.204★ and Engineering 86.230★.

Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 86.340★

### **Applied Thermodynamics**

Gas and vapour power cycles: reheat, regeneration, combined gas/vapour cycles, cogeneration. Heat pump and refrigeration cycles: vapour compression cycles, absorption refrigeration and gas refrigeration. Mixtures of perfect gases and vapours: psychrometry and combustion. Principles of turbomachinery.

Prerequisite: Engineering 86.240★.

Lectures three hours a week, problem analysis and laboratories one hour a week.

Engineering 86.352★

### **Feedback Control Systems**

Introduction to the linear feedback control. Analysis and design of classical control systems. Stability and the Routh-Hurwitz criteria. Time and frequency domain performance criteria, robustness and sensitivity. Root locus, Bode and Nyquist design techniques. Control system components and industrial process automation.

Prerequisites: Mathematics 69.375★ and Engineering 94.360★.

Lectures three hours a week; problem analysis and laboratories one hour a week.

Engineering 86.412★

### **Engineering Materials: Strength and Fracture**

Analysis and prevention of failures in metals and composite materials; micro-mechanisms of fracture, conditions leading to crack growth. Mechanisms of fracture and transition temperature effects, fracture mechanics, fatigue, environmentally assisted cracking, non-destructive evaluation and testing. Mechanical properties of structural composites.

Prerequisite: Engineering 86.270★.

Lectures three hours a week.

Engineering 86.491★

### **Mechanical and Aerospace Engineering Laboratory**

Students perform a series of laboratory exercises dealing with a wide range of mechanical engineering topics. Students relate theory and practice and develop experience with modern engineering equipment and measurement techniques. Good reporting practice is emphasized.

Prerequisite: Fourth-year registration.

Lectures and tutorials one hour a week, laboratory five hours a week.



**Engineering 86.495★****Professional Practice**

Presentations by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics and responsibilities, engineering practice and impact of technology on society. Oral and written communication skills are emphasized. Precludes additional credit for Engineering 82.495★, 94.395★ or 97.395★.

Prerequisite : Fourth-year registration.

Lectures three hours a week.

**Engineering 86.496★****Special Topics in Mechanical and Aerospace Engineering**

At the discretion of the Faculty, a course dealing with selected advanced topics of interest to Aerospace and Mechanical Engineering students may be offered.

Prerequisite: Permission of the Department.

**Aerospace Engineering****Engineering 87.302★****Aerospace Design and Practice**

Design approach and phases. Design integration. Influence of mission and other requirements on vehicle configuration. Trade-off studies, sizing and configuration layout. Flight vehicle loads, velocity-load factor diagram. Structural design: overall philosophy, role in design process, methods.

Prerequisites: Engineering 86.201 and Third-year registration.

Lectures three hours a week, problem analysis three hours a week.

**Engineering 87.311★****Lightweight Structures**

Structural concepts; theory of elasticity; bending, torsion and shear in thin-walled beams having single or multi-cell sections; work and energy principles; deformation and force analysis of advanced structures, including stiffened thin-wall panels; finite element methods. Stability and buckling of thin-walled structures.

Prerequisite: Engineering 86.322★.

Lectures three hours a week; problem analysis and laboratories one hour a week.

**Engineering 87.370★****Aerospace Materials and Manufacturing Methods**

Properties, behaviour and manufacturing methods for metals, polymers and ceramics used in aerospace applications. Specialty alloys for gas turbines. Properties and manufacture of aerospace composites. Behaviour of materials in space.

Prerequisite: Engineering 86.270★.

Lectures three hours a week; problem analysis and laboratories one hour a week.

**Engineering 87.403★****Aerospace Systems Design**

Stress and deflection analysis; fatigue, safe life, damage tolerant design. Propulsion systems integration; landing gear; control and other subsystems. Mechanical component design. Airworthiness regulations and certification procedures. Weight and cost estimation and control. System reliability. Design studies of aircraft or spacecraft components.

Prerequisite: Engineering 86.322★ and 87.302★.

Lectures three hours a week, problem analysis three hours a week.

**Engineering 87.430★****Acoustics and Noise Control**

Behaviour of compressible fluids, sound waves and properties of sound sources; measurement of sound; human perception of sound; prediction methods based on energy considerations; sound propagation in realistic environments: outdoors, rooms, ducts; absorption and transmission loss, noise control; case studies.

Prerequisite: Mathematics 69.375★.

Lectures three hours a week.

**Engineering 87.432★****Applied Aerodynamics and Heat Transfer**

Differential equations of motion. Viscous and inviscid regions. Potential flow: superposition; thin airfoils; finite wings; compressibility corrections. Viscous flow: thin shear layer approximation; laminar layers; transition; turbulence modelling. Convective heat transfer: free vs forced convection; energy and energy integral equations; turbulent diffusion. Also offered at the graduate level, with additional or different requirements, as Engineering 88.500, for which additional credit is precluded.

Prerequisite: Engineering 86.330★.

Lectures three hours a week.

**Engineering 87.434★****Computational Fluid Dynamics**

Differential equations of motion. Numerical integration of ordinary differential equations. Potential flows: panel methods; direct solution; vortex-lattice methods. Finite-difference formulations: explicit vs implicit methods; stability. Parabolized and full Navier-Stokes equations; conservation form. Transonic and supersonic flows: upwind differencing. Grid transformations. Computer-based assignments.

Prerequisite: Engineering 87.432★.

Lectures three hours a week.

**Engineering 87.436★****Aircraft and Spacecraft Performance and Dynamics**

Morphology of aircraft and spacecraft. Performance analysis of fixed wing aircraft: drag estimation, propulsion, take-off, climb and landing, endurance, payload/range, manoeuvres; operational economics. Performance analysis of rotor craft: rotor-blade motion, hovering and vertical ascent, forward flight, and autorotation. Rocket propulsion; escape velocity; orbital dynamics.

Prerequisite: Engineering 86.330★.

Lectures three hours a week.

**Engineering 87.438★****Stability and Control of Aircraft**

Static stability and control: equilibrium requirements; longitudinal stability requirements; neutral points; manoeuvring flight; control forces and control requirements; flight envelope diagram. Lateral stability requirements. Introduction to dynamic stability: axis systems; remarks on governing equations; phugoid and short period modes; lateral dynamic modes. Closed-loop control.

Also offered at the graduate level, with additional or different requirements, as Engineering 88.511, for which additional credit is precluded.

Prerequisites: Engineering 86.330★ and 86.352★.

Lectures three hours a week.

**Engineering 87.442★****Aerospace Propulsion**

Propulsion requirements, effects of Mach Number, altitude, and application; basic propeller theory; propeller, turboshaft, turbojet, turbofan and rocket; cycle analysis and optimization for gas turbine power plant; inter-relations between thermodynamic, aerodynamic and mechanical designs; rocket propulsion; selection of aero engines.

Precludes additional credit for Engineering 88.441★.

Prerequisites: Engineering 86.240★ and 86.330★.

Lectures three hours a week.

**Engineering 87.462★****Introductory Aeroelasticity**

Review of structural behaviour of lifting surface elements; structural dynamics, Laplace Transforms, dynamic stability; model analysis; flutter, Theodorsen's theory; flutter of a typical section; Wing flutter, T-tail flutter, propeller whirl flutter; gust response; buffeting, limit cycle flutter.

Prerequisites: Engineering 86.304★, 86.330★ and 94.360★.

Lectures three hours a week.

**Engineering 87.468★****Composite Materials**

Reinforcing mechanisms in composite materials; material properties. Strength and elastic constants of unidirectional composites; failure criteria. Analysis of laminated plates; bending and eigenvalue problems. Environmental effects and durability. Dam-



age tolerance. Design of composite structures.

Prerequisite: Engineering 86.322★.

Lectures three hours a week.

Engineering 87.481★

### **Spacecraft Design**

Types of spacecraft; mission requirements. Systems design considerations: configuration control during design; planning and scheduling. Environmental considerations: thermal, effect of vacuum, debris impact. Design implementation: mechanical, thermal, and electrical/electronic aspects. Spacecraft testing: vibrational, acoustic, vacuum, and thermal testing. Component testing. Simulation.

Prerequisites: Engineering 86.240★, and 87.302★ or 88.302★.

Lectures three hours a week.

Engineering 87.497

### **Aerospace Engineering Project**

Participation in team projects dealing with design and development of an aerospace vehicle or system. One or more such projects will be undertaken each year. Opportunities to exercise initiative, engineering judgment, self-reliance and creativity, in a team environment similar to industry. Oral presentations and reports.

Prerequisites: Completion of or concurrent registration in Engineering 87.403★; and Fourth-year registration in the Aerospace program.

## **Mechanical Engineering**

Engineering 88.302★

### **Machine Design and Practice**

The design of mechanical machine elements is studied from theoretical and practical points of view. Topics covered include: design factors, fatigue, and discrete machine elements. Problem analysis emphasizes the application to practical mechanical engineering problems.

Prerequisites: Engineering 86.201★, 86.322★.

Lectures three hours a week, problem analysis three hours a week.

Engineering 88.370★

### **Principles of Manufacturing Engineering**

Manufacturing processes, materials. Casting: solidification and heat flow theory, defect formation, casting design. Metal forming: elementary plasticity theory, plastic failure criteria, force and work calculations. Bulk and sheet forming. Joining: heat flow and defect formation theory, residual stresses. Machining theory and practice. Hardening: diffusion, wear resistance.

Prerequisite: Engineering 86.270★.

Lectures and tutorials three hours a week; problem analysis and laboratories one hour a week.

Engineering 88.403★

### **Mechanical Systems Design**

Design of mechanical systems: establishing design criteria, conceptual design, design economics, value analysis, synthesis and optimization. Mechanical elements/systems: gear and flexible drive systems, fluid power systems. Problem analysis involves synthesis of mechanical systems in practice.

Prerequisite: Engineering 88.302★.

Lectures three hours a week, problem analysis three hours a week.

Engineering 88.406★

### **Vehicle Engineering I**

The course emphasizes the engineering and design principles of road transport vehicles. Topics to be covered include: performance characteristics, handling behaviour and ride quality of road vehicles.

Prerequisites: Engineering 86.211★ and Third- or Fourth-year registration.

Lectures three hours a week.

Engineering 88.407★

### **Vehicle Engineering II**

Engineering and design principles of off-road vehicles and air cushion technology. Topics include: mechanics of vehicle-terrain interaction - terramechanics, performance characteristics of off-road vehicles, steering of tracked vehicles, air cushion systems and their performance, applications of air cushion technology to transportation.

Prerequisites: Engineering 86.211★ and Third- or Fourth-year registration.

Lectures three hours a week.

Engineering 88.411★

### **Mechanics of Deformable Solids**

Course extends the student's ability in design and stress analysis. Topics include: introductory continuum mechanics, theory of elasticity, stress function approach, Lamé and Mitchell problems, stress concentrations, thermoelasticity and plasticity.

Prerequisite: Engineering 86.322★.

Lectures three hours a week.

Engineering 88.413★

### **Fatigue and Fracture Analysis**

Elastic and elasto-plastic fracture mechanics. Fatigue design methods, fatigue crack initiation and growth Paris law and strain-life methods. Fatigue testing, scatter, mean stress effects and notches. Welded and built up structures, real load histories and corrosion fatigue. Damage tolerant design and fracture control plans.

Lectures three hours a week.

Engineering 88.414★

### **Vibration Analysis**

Free and forced vibrations of one and two degree-of-freedom systems. Vibration measurement and isolation. Numerical methods for multi-degree-of-freedom systems. Modal analysis techniques. Dynamic vibration absorbers. Shaft whirling. Vibration of continuous systems: bars, plates, beams and shafts. Energy methods. Holzer method.

Prerequisite: Engineering 86.304★.

Lectures three hours per week.

Engineering 88.435★

### **Fluid Machinery**

Types of machines. Similarity: performance parameters; characteristics; cavitation. Velocity triangles. Euler equation: impulse and reaction. Radial pumps and compressors: analysis, design and operation. Axial pumps and compressors: cascade and blade-element methods; staging; off-design performance; stall and surge. Axial turbines. Current design practice. Also offered at the graduate level, with additional or different requirements, as Engineering 88.541, for which additional credit is precluded.

Prerequisite: Engineering 86.330★.

Lectures three hours a week.

Engineering 88.441★

### **Power Plant Analysis**

Criteria of merit; selection of power plant for transportation and power generation applications; interrelation among mechanical, thermodynamic and aerodynamic design processes; jet propulsion, turbojets and turbofans; alternative proposals for vehicular power plant; combined cycle applications.

Precludes additional credit for Engineering 87.442★.

Prerequisite: Engineering 86.240★.

Lectures three hours a week.

Engineering 88.443★

### **Energy Conversion and Power Generation**

Energy sources and resources. Basic elements of power generation. Hydro-electric, fossil-fuel and fissile-fuel power plants. Other methods of conversion. Future methods of conversion. Economic and environmental considerations. Power generation systems. Future power needs.

Prerequisite: Engineering 86.240★.

Lectures three hours a week.



**Engineering 88.446 ★**

**Heat Transfer**

Mechanisms of heat transfer: fundamentals and solutions. Steady and transient conduction: solution and numerical and electrical analog techniques. Convective heat transfer: free and forced convection for laminar and turbulent flows; heat exchangers. Heat transfer between black and grey surfaces, radiation shields, gas radiation, radiation interchange.

Prerequisite: Engineering 86.330 ★.

Lectures three hours a week.

**Engineering 88.447 ★**

**Heating, Ventilating and Air Conditioning**

Comfort. Environmental demands for residential, commercial and industrial systems. Methods of altering and controlling environment. Air distribution. Refrigeration methods, equipment and controls. Integrated year-round air-conditioning and heating systems; heat pumps. Cooling load and air-conditioning calculations. Thermal radiation control. Component matching. System analysis and design.

Prerequisites: Engineering 86.240 ★ and Third-year registration.

Lectures three hours a week.

**Engineering 88.451 ★**

**State Space Modeling and Control Techniques**

Review of matrices. Geometric structure and dynamics of linear systems. Controllability and observability. Pole placement design of controllers and observers. Design of regulator and servo systems. Transmission zeros. Eigenstructure assignment. Relationship to frequency or classical control techniques. Computer solutions using MATLAB. Applications.

Precludes additional credit for Engineering 94.552 ★.

Prerequisite: Engineering 86.352 ★.

Lectures three hours a week.

**Engineering 88.453 ★**

**An Introduction to Robotics**

History of robotics and typical applications. Robotic actuators and sensors. Kinematics of manipulators, inverse kinematics, differential relationships and the Jacobian. Manipulator dynamics. Trajectory generation and path planning. Robot control and performance evaluation. Force control and compliance. Applications in manufacturing and other industries.

Prerequisites: Mathematics 69.375 ★ and Engineering 94.360 ★.

Lectures three hours a week.

**Engineering 88.464 ★**

**Finite Element Methods**

Finite element methodology with emphasis on applications to stress analysis, heat transfer and fluid flow using the simplest one- and two-dimensional elements. Direct equilibrium, variational

and Galerkin formulations. Computer programs and practical applications. Higher order elements.

Prerequisites: Engineering 86.322 ★ and 86.330 ★.

Lectures three hours a week.

**Engineering 88.474 ★**

**Computer-Integrated Manufacturing Systems (CIMS)**

Overview of the topics essential to CIMS including computer graphics, geometric modelling, numerically controlled machining, and flexible manufacturing with the objective of understanding the fundamental data structures and procedures for computerization of engineering design, analysis and production. Also offered at the graduate level, with additional or different requirements, as Engineering 88.574, for which additional credit is precluded.

Prerequisite: Engineering 87.370 ★ or 88.370 ★.

Lectures three hours a week.

**Engineering 88.475 ★**

**CAD/CAM**

Computer aided design (CAD): Design process, computer graphics hardware, software standards. Wire frames, boundary representations, constructive solids geometry. Data bases. Graphics, product interchange files. Computer aided manufacturing (CAM): numerical control (NC), CNC, DNC, adaptive control. CAM programming. Management issues including acquisition, training and security. Also offered at the graduate level, with additional or different requirements, as Engineering 88.575, for which additional credit is precluded.

Prerequisite: Fourth-year registration.

Lectures three hours a week.

**Engineering 88.485 ★**

**Measurement Systems and Data Handling**

Experimental data, accuracy and uncertainty analysis. Analog systems. Sensors. Signal conditioning. Op-Amps, instrumentation amplifiers, charge amplifiers, filters. Digital techniques. Encoders, A/D D/A converters. Data acquisition using microcomputers. Hardware and software considerations. Interfacing. Applications to measurement of motion, strain, force/torque, pressure, fluid flow, temperature.

Precludes additional credit for Engineering 97.485 ★.

Prerequisites: Mathematics 69.352 ★, Engineering 94.360 ★ and 97.365 ★ or 97.251 ★.

Lectures three hours a week.

**Engineering 88.497**

**Engineering Project**

Students are required to complete a major project in engineering analysis, design, development or research. Opportunities to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc.

# School for Studies in Art and Culture Music (Arts and Social Sciences)

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Telephone: 520-5770

## Academic Administration

**Director, To be announced**

**Assistant Director, Bryan Gillingham**

**Supervisor of Undergraduate Studies, Patrick Cardy**

**Supervisor of Performance and Practical Studies,  
Deirdre Piper**

**Supervisor of Practice, Elaine Keillor**

## Teaching Staff

### Professors

**Patrick R.T. Cardy, B.Mus. (Western Ontario), M.M.A., D.Mus. (McGill) • Bryan R. Gillingham, B.A., B.Mus. (British Columbia), M.Mus. (King's College), Ph.D. (Washington) • Alan Murray Gillmor, B.Mus. M.A. (Michigan), Ph.D. (Toronto) • Elaine Keillor, B.A., M.A., Ph.D. (Toronto) • John Shepherd, B.A., B.Mus. (Carleton), A.R.C.M. (Royal College of Music), D. Phil. (York, U.K.)**

### Associate Professor

**Deirdre Piper, B.Mus., Ph.D. (Manchester), G.R.S.M., A.R.M.C.M.**

### Instructor

**Jennifer Giles, A.Mus., B.Mus. (McGill), M.A. (Carleton)**

### Adjunct Research Professors

**P. Bellomia • David Gardner • H. Kallmann (National Library of Canada) • Lora Matthews • Peter Wicke (Direktor, Forschungszentrum populäre Musik, Humboldt Universität)**

### Research Associates

**Robert Barclay (Canadian Conservation Institute) • Paolo Bellomia • Clifford Ford (Canadian Musical Heritage Society) • Anne-Marie Gaston • Carl Widstrand**

### Sessional Lecturers

**M. Bussière • L. Canton • R. Frayne • A. Schau**

### Directors

**Lisette Canton, Carleton Choir • Rob Frayne, Jazz Ensembles • Iain Phillips, Early Music Ensemble**

### Instrumental and Vocal Instructors

**Peggy Atherton, Viols • Nicholas Atkinson, Tuba • Paul Bourdeau, Guitar • Jean-Guy Brault, Saxophone • Susanna Burton, Voice • Ian Clyne, Piano • Wayne Eagles, Guitar • Garry Elliott, Guitar • Lawrence Ewashko, Voice • Mark Ferguson, Piano • Rob Frayne, Saxophone • Barbara Galzauskas, Recorder • John Geggles, Double Bass • Don Gress, French Horn • Jay Harrison, Euphonium • Drummond Hudson, Trombone • Verna Jacobson, Piano • Don Johnson, Percussion • Ken Kanwisher, Electric Bass • Kim Kaskiw, Voice • Elaine Keillor, Piano • Lorne Kelly, Drum Set • Manon LeComte, Harp • Kirk MacDonald, Saxophone • Joan Milkson, Violin/Viola • Veronika Milroy, Oboe • Tom Moyer, Trumpet • Gloria Jean Nagy, Voice • Dina Namer, Harpsichord, Piano • Michael Namer, Bassoon • Robert Oades, Trumpet • Iain Phillips, Early Instruments • Deirdre Piper, Organ • Catherine Rollins, Flute • Stephen Rollins, Guitar • Laurie Rosewarne, Accordion • Barbara Ross, Voice • Bill Rowat, Trumpet • Ann Schau, Piano • John Seck, Guitar • Ken Simpson, Percussion • Joy Skrapek, Clarinet • Charlotte Stewart, Voice • Wesley Warren, Organ • Donald Whifton, Cello**

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## General Information

The purpose of the programs offered by the Discipline of Music is to promote an intellectual, aesthetic and emotional understanding of music as an expression of human cultural activity. All students will be encouraged to examine the meanings and motivations of the art and to develop their speculative and critical responses to it in both historical and contemporary contexts. Stated briefly, the Discipline wishes to offer flexibility of choice and emphasis in programs that foster a basic grasp of the nature of musical processes from historical, social, practical and artistic points of view.

In addition to its undergraduate programs, the Discipline offers courses at the graduate level in the history of Canadian music in co-operation with the School of Canadian Studies.

The Discipline also sponsors a variety of performing groups including the *Carleton Choir*, *Early Music Ensemble*, *Carleton Concert Band*, and *The Contemporary Music Group*, and the *Jazz Ensembles*, all of which are open to Carleton students and members of the community.

## Courses Requiring No Previous Music Theory or Music Performance

Although serving Music's programs, all courses offered by Music other than performance courses (which are identified in the Calendar as being open only to B.Mus. students) can be taken as options by students registered in programs elsewhere in the University. A substantial number of the courses that can be taken as options require no previous music theory or music performance. Courses requiring no previous music theory or music performance as follows: 30.101★, 30.102★, 30.200★, 30.202★, 30.203★, 30.204★, 30.205★, 30.206★, 30.207★, 30.208★, 30.209★, 30.211★, 30.212★, 30.213★, 30.214★, 30.300, 30.312★, 30.313★, 30.314★, 30.316★, 30.332★, 30.340★, 30.341★, 30.342★, 30.433★, 30.498. Special topics (30.420★ to 30.424★) and specialized studies courses (30.420★ to 30.424★) may or may not be offered in any year and may or may not require previous music theory or music performance. Students are advised to consult Music each year regarding these courses.

## Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 49) and all Faculty regulations (see p. 82), in addition to all Discipline regulations and requirements as set out below.

## Honours in Music Program (B.Mus.)

Each prospective student should have an appreciable background in practical music-making and *must* consult the Discipline of Music for advice before entering the program.

Admission to the B.Mus. program is by audition. Auditions will be scheduled beginning in March of the academic year preceding entry to the program. Applicants who reside more than 100 km from Ottawa can audition by means of a tape with an affidavit. Prospective students can audition in any classical, folk, traditional or popular idiom. The applicant is expected to display technical competence in an instrument or voice. Full details of what is expected in the audition are available from the Music Discipline Office of the School.

The B.Mus. program requires 20.0 credits (plus four 0.0 credit value courses in Ensemble courses). The music requirements consist of a minimum of 13.0 credits in Music as follows:

### 1. Performance:

30.190★, 30.290★, 30.390★, 30.490★ [Note: For students who take 30.497 to satisfy 4 below, a 0.5 credit in Music at the 400-level must be taken in lieu of 30.490★];

### 2. Music Theory:

30.171★, 30.172★, 30.270★, 30.271★, 30.272★  
0.5 credit from 30.370★, 30.380★;

### 3. Music History/Musicology:

30.101★, 30.102★;  
1.5 credits from 30.205★, 30.206★, 30.207★, 30.208★, 30.209★, 30.210★, 30.211★, 30.212★, 30.213★, 30.214★, 30.215★, 30.216★, 30.300;

### 4. Choice:

1.0 additional credit in Music at the 200-level;  
1.5 credits in Music at the 300-level;  
2.0 credits in Music at the 400-level;

### 5. Ensembles:

30.193★, 30.293★  
1.0 credit chosen from: 30.192★, 30.292★, 30.392★, 30.393★, 30.492★, 30.493★.

Students are free to choose other music courses as electives.

Students who obtain a grade of *F* in 30.190★, 30.290★, 30.390★, 30.490★, or 30.497★, or a grade of *Uns* in 30.192★, 30.193★, 30.292★, 30.293★, 30.392★, 30.393★, 30.492★, or 30.493★ will be removed from the B.Mus. program. Students transferring into and continuing in the B.Mus. program with First-, Second- or Third-year standing must have achieved a GPA of 6.0 in the required Music credits and a CI of 6.00. Students beginning the final 5.0 credits towards the B.Mus. degree must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. To be eligible to graduate, B.Mus. students must have a Graduation Average of 6.5 in the required Music credits and a CI of 6.00. The Music GPA and the Music Graduation Average will be calculated only on the successfully completed graded courses counting towards the required Music credits in the program; Music credits counted as options in the program and courses graded *Sat/Uns* will not be included in the calculation. Courses graded *Sat/Uns* will also not be counted as attempts and will not be used in the calculation of the CI.

## Honours in Music Program (B.A. Hons.)

Each prospective student *must* consult the Discipline of Music for advice before entering the program.

The B.A. (Honours) program requires 20.0 credits, including a minimum of 10.0 credits in Music as follows:

### 1. Music 30.101★, 30.102★;

2. 1.5 credits chosen from Music 30.205★, 30.206★, 30.207★, 30.208★, 30.209★, 30.210★, 30.211★, 30.212★, 30.213★, 30.214★, 30.215★, 30.216★;

### 3. Music 30.300;

4. 2.5 additional credits in Music at the 200-level;

5. 2.0 credits in Music at the 300-level;

6. 2.0 credits in Music at the 400-level;

**Note:** Performance courses may not be taken in this program, although other music courses may be chosen as electives.

Students transferring into and continuing in the B.A. Honours program with First-, Second- or Third-year standing must have achieved a GPA of 6.0 in the required Music credits and a CI of 6.00. Students beginning the final 5.0 credits towards the B.A. Honours degree must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. To be eligible to graduate B.A. Honours students must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. The Music GPA and the Music Graduation Average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.



## Combined Honours Program (B.A. Hons.)

Each prospective student *must* consult the department or school of each discipline for advice before entering the Combined Honours program.

The four-year B.A. Honours program in Music combined with another subject requires 20.0 credits, including a minimum of 7.0 credits in Music as follows:

1. Music 30.101★ and 30.102★;
2. 2.0 credits in Music at the 200-level;
3. 2.0 credits in Music at the 300-level;
4. 1.0 credit in Music at the 400-level;
5. 1.0 additional credit in Music.

Performance courses may not be taken in this program.

Students transferring into and continuing in the B.A. Honours program with First-, Second- or Third-year standing must have achieved a GPA of 6.0 in the required Music credits and a CI of 6.00. Students beginning the final 5.0 credits towards the B.A. Combined Honours degree must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. To be eligible to graduate, B.A. Combined Honours students must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. The Music GPA and the Music Graduation average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

## B.A. Program

The B.A. program in Music requires 15.0 credits, including 7.0 credits in Music as follows:

1. Music 30.101★ and 30.102★;
2. 1.5 credits from Music 30.205★, 30.206★, 30.207★, 30.208★, 30.209★, 30.210★, 30.211★, 30.212★, 30.213★, 30.214★, 30.215★, 30.216★;
3. 1.5 credits at the 200-level;
4. 2.0 credits at the 300-level or above;
5. 1.0 additional credit in Music.

Performance courses may not be taken in this program. Students transferring into and continuing in the B.A. (3 year) (Music) program must have achieved and must maintain a GPA of 4.0 in the required Music credits and a CI of 4.00 in order to remain in good standing in the program. The Music GPA and the Music Graduate Average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

## Combined B.A. Program

Combined B.A. programs may be arranged with other departments and disciplines in the Faculties of Arts and Social Sciences and Public Affairs and Management. Both departments or disciplines must approve a Combined B.A. program.

The B.A. program in Music combined with another subject requires 15.0 credits, including a minimum of 5.0 credits in Music as follows:

1. Music 30.101★ and 30.102★;
2. 2.0 credits in Music at the 200-level;
3. 1.0 credit in Music at the 300-level or above;
4. 1.0 additional credit in Music.

Performance courses may not be taken in this program. Students transferring into and continuing in the B.A. (Music combined with another discipline) program must have achieved and must maintain a GPA of 4.0 in the required Music credits and a CI of 4.00 in order to remain in good standing in the program. The Music GPA and

the Music Graduation Average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

The majority of courses are open to non-Majors; students are advised to consult the Discipline.

### Music 30.101★

#### **A History of Western Classical Music: Medieval to the Present**

Western classical music from the medieval period to the present. Major historical periods (Medieval, Renaissance, Baroque, Classical, Romantic, Modern, Postmodern) examined through representative music ranging from Gregorian chant to contemporary experimental trends.

Precludes additional credit for Music 30.100.

Lectures three hours a week.

### Music 30.102★

#### **Introduction to the History of Popular Music**

History of world popular music from the nineteenth century until the present. Topics may include the growth of the music industry, the impact of technology, stardom, world music, the role of the press, copyright, censorship, and sexuality.

Precludes additional credit for Music 30.100.

Lectures three hours a week.

### Music 30.116★

#### **Elementary Materials of Music**

The rudiments of music for students with no background in the systematic study of music theory. Topics include elementary harmony and the basics of rhythm and melody. Aural training with emphasis on the development of analytic listening skills. Not available to B.Mus. students or those with sufficient expertise to enrol in Music 30.171★.

Precludes additional credit for Music 30.115.

Seminar two hours a week.

### Music 30.117★

#### **Elementary Materials of Music**

A continuation of Music 30.116★ with more attention to the harmonic and textural aspects of music. Not available to B.Mus. students or those with sufficient expertise to enrol in Music 30.171★.

Precludes additional credit for Music 30.115.

Seminar two hours a week.

### Music 30.171★

#### **An Introduction to Theoretical Studies I**

Tonal thinking, with emphasis on the development of musicianship skills.

Precludes additional credit for Music 30.150★, 30.151★, and 30.170.

Prerequisite: Permission of the Discipline.

Lectures and seminars five hours a week.

### Music 30.172★

#### **An Introduction to Theoretical Studies II**

A continuation of the materials of 30.171★.

Precludes credit for Music 30.150★, 30.151★ and 30.170.

Lectures and seminars five hours a week.

### Music 30.190★

#### **Performance I**

Vocal or instrumental instruction for B.Mus. students only. Instruction is offered in high-culture, traditional and popular idioms. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration is restricted to students in the B.Mus. program only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.



Prerequisite: Audition.  
Individual tuition twenty hours a year.

**Music 30.191★**

**Class Piano**

Tuition offered on a group basis for keyboard (subject to sufficient enrollment) to obtain basic playing and reading skills. Registration in this course is restricted to students in the B.Mus. program only. This course carries no credit for the B.A. Honours and B.A. B.A. (3 year) degrees.

Precludes additional credit for Music 30.195★.

Prerequisite: Permission of the Discipline.

Group instruction twenty hours a year.

**Music 30.192★**

**Instrumental Ensemble I**

Participation in an instrumental ensemble, by arrangement with the Supervisor of Performance and Practical Studies. Registration is restricted to students in the B. Mus. program. Music 30.192★ (as well as all the other instrumental ensemble courses: 30.292★, and 30.492★) is a required course in the B.Mus. program with a 0.0 credit value. Grades for the courses are *Sat* (satisfactory) or *Uns* (unsatisfactory).

Prerequisite: First-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

**Music 30.193★**

**Choral Ensemble I**

Participation in a choral ensemble, by arrangement with the Supervisor of Performance and Practical Studies. Registration is restricted to students in the B.Mus. program. Music 30.193★ as well as all the other choral ensemble courses (30.293★, 30.393★, 30.493★) is a required course in the B.Mus. program with a 0.0 credit value. Grades for the course are *Sat* (satisfactory) or *Uns* (unsatisfactory).

Prerequisite: First-year standing in the B.Mus program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

**Music 30.205★**

**Ragtime and Jazz**

A survey of ragtime and jazz from their roots in pre-twentieth-century black music and white music to contemporary jazz idioms, including an examination of New Orleans jazz, and Dixieland, swing, bebop, cool jazz and free jazz.

Precludes additional credit for Music 30.225★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.206★**

**Popular Musics before 1945**

An examination of selected aspects of the development of Anglo-American popular musics from their roots in the nineteenth century until the shifts and tensions which led to the advent of rock 'n' roll and soul in the 1950s. Genres to be examined include blues, country, the sentimental ballad, and Broadway and film music. Precludes additional credit for Music 30.223★, 30.226★ and 30.228★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.207★**

**Popular Musics after 1945**

An examination of selected aspects of the development of Anglo-American and world popular musics from the advent of rock 'n' roll and soul to the present. Genres to be examined include early rock 'n' roll, British rhythm 'n' blues, Motown, West Coast music, punk, heavy metal, new wave, disco and country.

Precludes additional credit for Music 30.227★, 30.228★, and 30.229★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.208★**

**An Introduction to Ethnomusicology**

The basic techniques in ethnomusicology are introduced and illustrated through case studies of the folk and tribal musics of

Europe, Asia, Africa, Australia and Oceania, North and South America.

Precludes additional credit for Music 30.230★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.209★**

**Music of the Asian High Cultures**

A comparative and analytical study of music in Asian high cultures, including India, China, Korea, Indonesia, Japan, and the Arabic world, through an examination of the music, musical instruments and theoretical systems.

Precludes additional credit for Music 30.231★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.210★**

**Music in the Middle Ages**

A survey of music in its courtly, national and ecclesiastical contexts from 350 until 1450, including the study of secular monophony, medieval polyphony and liturgical music.

Precludes additional credit for Music 30.200★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.211★**

**Music in the Renaissance**

A survey of music from 1450 to 1650, including examination of works from the Burgundian and Flemish schools, French chanson, sacred Latin music, Italian and Elizabethan madrigal, and dance music. Transitions from the renaissance to baroque style will also be explored.

Precludes additional credit for Music 30.201★.

Prerequisite: Second-year standing.

Lecture three hours a week.

**Music 30.212★**

**Music in the Baroque Era**

A survey of the major genres and composers in the period 1650 to 1750. Genres considered will be instrumental music, oratorio, motet, cantata, sonata, concerto, and opera. Some of the composers studied will be Schütz, Lully, Couperin, Rameau, Buxtehude, the Scarlattis, Vivaldi, Bach, and Handel.

Precludes additional credit for Music 30.201★.

Prerequisite: Second-year standing.

Lecture three hours a week.

**Music 30.213★**

**Music in the Classical Era**

European music from the early eighteenth century to the beginning of Romanticism. The evolution of the Classical style in important works of composers from the 1720s to the Viennese school of Haydn, Mozart, and Beethoven.

Precludes additional credit for Music 30.202★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.214★**

**Music in the Romantic Era**

European classical music from c.1790 to c.1910. Important genres (art song, symphony, opera, etc.) as well as individual and national styles in the context of the socio-political climate of the period.

Precludes additional credit for Music 30.202★.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Music 30.215★**

**Twentieth-Century Music to World War II**

A survey of European high-culture music from 1890 to circa 1945. Idioms to be examined in the socio-political climate of the period include Debussyan impressionism, Viennese expressionism, nationalism and Stravinskyan neoclassicism.



Precludes additional credit for Music 30.203★.

Prerequisite: Second-year standing.

Lectures three hours a week.

#### Music 30.216★

##### **Music Since World War II**

A study of selected aspects of the musical avant-garde in the Western classical tradition in the socio-political climate of the post-War period. Aspects to be examined include serialism, colouristic and textural composition, music of political commitment, electronic music, musical theatre, process music and the music of chance.

Precludes additional credit for Music 30.204★.

Prerequisite: Second-year standing.

Lectures three hours a week.

#### Music 30.260

##### **Composition I**

An introductory course designed to enable students to develop abilities in the writing of original music. The study and application of modern and contemporary styles and techniques are emphasized.

Prerequisite: Music 30.170 or permission of the Discipline.

Lectures and seminars three hours a week.

#### Music 30.265★

##### **Choral Conducting**

A course designed to introduce students to the special stylistic features of choral music from the Renaissance to the present as well as to a variety of practical techniques (vocal production, gesture, conducting patterns, diction, etc.). The course includes a survey of choral literature as well as practical experience in conducting techniques.

Lectures three hours a week.

#### Music 30.270★

##### **Theoretical Studies: Common Practice**

A study of the harmonic, melodic, rhythmic and formal structures of music of the common practice period, with emphasis on the development of written musical skills.

Precludes additional credit for Music 30.250★.

Prerequisite: Music 30.170 or permission of the Discipline.

Lectures two hours a week throughout the year.

#### Music 30.271★

##### **Theoretical Studies: Popular Music Practice**

A study of the rhythmic, melodic, harmonic and formal structures of popular musics.

Prerequisite: Music 30.170 or permission of the Discipline.

Lectures two hours a week throughout the year.

#### Music 30.272★

##### **Theoretical Studies: Aural Training**

A practical study of music as an aural phenomenon. Hearing skills and aural concentration are developed through recall, reproduction, aural analysis and transcription. Sound materials are drawn from a wide range of sources, live and recorded.

Precludes additional credit for Music 30.251★.

Prerequisite: Music 30.170 or permission of the Discipline.

Seminars three-and-a-half hours a week throughout the year.

#### Music 30.273★

##### **Theoretical Studies: Practical Skills**

This course is designed to give a practical study of rhythm, harmony and melody on the keyboard. The emphasis will be on vocal and instrumental accompaniment and the development of improvisation skills in a variety of styles.

Precludes additional credit for Music 30.152★.

Prerequisites: Music 30.170 or equivalent and permission of the Discipline.

Seminars one and one-half hours a week throughout the year.

#### Music 30.290★

##### **Performance II**

A continuation of Music 30.190★ for B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration is restricted to students in the B.Mus.

program only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

Prerequisite: Second-year standing, Music 30.190★ or permission of the Discipline.

Individual tuition twenty hours a year.

#### Music 30.292★

##### **Instrumental Ensemble II**

Instrumental ensemble, a continuation of 30.192★.

Prerequisite: Second-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

#### Music 30.293★

##### **Choral Ensemble II**

Choral ensemble, a continuation of 30.193★.

Prerequisite: Second-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

#### Music 30.300

##### **Approaches to the Study of Music**

This course surveys the development of historical musicology, ethnomusicology, popular music studies, music theory, music analysis and music criticism as distinct sub disciplines and considers the range of theories and methods they provide for the study of music. The course considers established approaches as well as more recent developments deriving from various forms of cultural theory and feminism.

Precludes additional credit for Music 30.321★, 30.322★, 30.471★ and 30.472★.

Prerequisites: Music 30.100 and permission of the Discipline.

Seminars three hours a week.

#### Music 30.312★

##### **Music in the United States in the Twentieth Century**

A survey of contemporary American music. Topics include: Ives and the experimental tradition; Copland; Thomson; Harris and the American nationalists; the neoromantics; Gershwin and the third stream; and post-1945 developments in indeterminacy and minimalism.

Precludes additional credit for Music 30.312 (if taken before 1986-87).

Lectures three hours a week.

#### Music 30.313★

##### **Aspects of Canadian Musical Heritage**

Canadian music introduced through its roots in First Peoples, Anglo- and Franco-folk and notated musics which provided the foundation for Canada's concert music traditions of the twentieth century.

Precludes additional credit for Music 30.310.

Lectures three hours a week.

#### Music 30.314★

##### **Popular Musics of Canada**

Popular musics by Canadians including sheet music examples from 1840s on, Canada's successes in Tin Pan Alley, in Afro-Canadian styles, and various popular expressions of the twentieth century (country, rock, rap, bhangra, First Nations contemporary, etc.).

Precludes additional credit for Music 30.310.

Lectures three hours a week.

#### Music 30.316★

##### **Popular Musics of the World**

Popular musics of the world, including those of Africa, Asia, Central and Eastern Europe, Latin America, the Caribbean and Oceania. Special attention to the interaction between some world popular musics and the Western record industry.

Prerequisite: Music 30.208★ or Music 30.209★.

Lectures three hours a week.



**Music 30.332★**

**Music and Gender I**

This course explores the role of gender in the theory and practice of music in western and non-western cultures. Attention is directed to women's participation in music to make good their absence from traditional accounts in music's history, significance and development.

Lectures three hours a week.

**Music 30.340★**

**A History of Opera before 1800**

A survey of the development of opera from the beginnings to about 1800. The course deals with the major monuments of Italian, French, German and English opera, by such composers as Monteverdi, Cavalli, Scarlatti, Purcell, Lully, Gluck, Rameau, Mozart and Haydn.

Lectures three hours a week.

**Music 30.341★**

**A History of Opera from 1800 to 1945**

A study of romantic and contemporary opera through an examination of selected works from Weber's *Der Freischütz* to Britten's *Peter Grimes*, including an investigation of national styles from Wagnerian music drama and Italian verismo to Russian realism and German expressionism.

Lectures three hours a week.

**Music 30.342★**

**Film Music**

This course will explore the use of music in film, from the silent era to the present day, studying the techniques, styles and theory of film music through the examination of selected films. (Also listed as Film Studies 19.342★.)

Lectures three hours a week.

**Music 30.360**

**Composition II**

In part a continuation of Music 30.260, but more emphasis is placed on developing the student's own creative personality.

Prerequisite: Music 30.260 or permission of the Discipline.

Seminars two hours a week.

**Music 30.361**

**Orchestration**

A study of the instruments of the orchestra, their historical background, ranges and technical abilities, with emphasis on the development of practical written skills in orchestrating works for a variety of small and large ensembles.

Prerequisite: Music 30.270★ or permission of the Discipline.

Lectures three hours a week.

**Music 30.363★**

**Computer Music Techniques**

An introduction to the techniques of sound synthesis primarily through practical experience at the digital synthesizer and computer. This course includes the basics of machine operations, software and computer applications to composition and synthesis. Enrollment in this course is limited.

Prerequisite: Second-year standing.

Lectures three hours a week, plus individual studio time.

**Music 30.364★**

**Computer Music Projects**

A continuation of Music 30.363★. The various applications of digital equipment are examined through the realization of original projects. Students may focus on studio composition, software development or analytic research. Appropriate compositional techniques and problem solving strategies are also discussed. Enrollment in this course is limited.

Prerequisite: Music 30.363★ or Second-year standing.

Lectures three hours a week, plus individual studio time.

**Music 30.370★**

**Theoretical Studies: Advanced and Post Common Practice**

A study of the structures and styles of music of the late and post common practice period, with emphasis on the development of

written musical skills.

Precludes additional credit for Music 30.350★ or 30.350 (if taken before 1987-88).

Prerequisite: Music 30.270★ or permission of the Discipline.

Lectures three hours a week.

**Music 30.371★**

**Jazz Styles and Structures: Analysis and Practice**

This course studies the development of jazz styles from ragtime to fusion and involves both theory and practice. It has three components: style and structure analysis, where forms and structures will be studied; ear training, where exercises for aural recognition and response will accompany analysis; and improvisation, where exercises and pieces will be played on instruments of students' choosing.

Precludes additional credit for Music 30.424★.

Prerequisite: Music 30.271★ or permission of the Discipline.

Lectures three hours a week.

**Music 30.380★**

**Analytical Studies: Works**

A study of the style and structure of selected works from the Middle Ages to the present. The object of the course is to pinpoint key components of the musical processes represented while at the same time developing and applying techniques of musical analysis.

Precludes additional credit for Music 30.355★ and 30.356★.

Prerequisite: Music 30.170.

Lectures and seminars three hours a week.

**Music 30.390★**

**Performance III**

A continuation of Music 30.290★ for B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration in this course is restricted to B.Mus. students only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

Prerequisite: Third-year standing, Music 30.290★ or permission of the Discipline.

Individual tuition twenty hours a year.

**Music 30.392★**

**Instrumental Ensemble III**

Instrumental ensemble, a continuation of 30.292★.

Prerequisite: Third-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

**Music 30.393★**

**Choral Ensemble III**

Choral ensemble, a continuation of Music 30.293★.

Prerequisite: Third-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

**Music 30.413★**

**Topics in Ethnomusicology**

Issues of anthropological, sociological, and analytical approaches are examined in the context of detailed analyses of selected musical traditions. Also offered at the graduate level, with additional requirements, as Music 30.513, for which additional credit is precluded.

Prerequisite: Fourth-year standing.

Seminar two hours a week.

**Music 30.414★**

**Musics of Canada's First Peoples**

The context and significance of musical expressions for representative Nations in each of the Canadian geographical regions, Maritime, Eastern Nomadic, Eastern Sedentary, Plains, Western Subarctic, Plateau, Northwest Coast, and Arctic, are examined from the pre-Contact period to the present. Also offered at the graduate level, with additional requirements, as Music 30.512, for which additional credit is precluded.



Prerequisite: Fourth-year standing.  
Seminar two hours a week.

Music 30.419

**Specialized Studies**

A course designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.420★

**Special Topics**

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.421★

**Special Topics**

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.422★

**Special Topics**

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.423★

**Special Topics**

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.424★

**Special Topics**

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.425★

**Specialized Studies**

Courses designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.426★

**Specialized Studies**

Courses designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.427★

**Specialized Studies**

Courses designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.428★

**Specialized Studies**

Courses designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.429

**Specialized Studies**

A course designed for Music Honours students who have acquired an extensive background through courses in theory, musi-

cology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.430★

**Notation of Medieval and Renaissance Music**

An introduction to the notation of medieval and renaissance music with emphasis on the major paleographic and transcriptional problems to be encountered in early chant notation, square and Franconian notations, the innovations of the Ars Nova and mannerist phases, white notation, and various lute tablatures. Examples are selected, for detailed study and transcription, from the ninth to sixteenth centuries.

Prerequisite: Music 30.200★ or permission of the Discipline.

Lectures three hours a week.

Music 30.431★

**Twentieth-Century Musical Notation**

A seminar in twentieth-century notation, considering the modification of existing systems to accommodate new compositional and performance practices and the development of new systems. Topics discussed include the psychology of notation, information theory in music, classification systems, graphic notation, indeterminate scores and calligraphic techniques.

Prerequisite: Music 30.204★ or permission of the Discipline.

Lectures three hours a week.

Music 30.433★

**Music and Gender II**

This course explores the relationship between the social and formal organization of music and the social and formal organization of gender difference. A principal focus of the course is to understand the role of music in the social construction of gender as well as the role of gender in the determination of musical style and taste.

Precludes additional credit for Music 30.333★ and 30.424★.

Prerequisite: Music 30.332★ or permission of the Discipline.

Seminar three hours a week.

Music 30.460

**Composition III**

A continuation of Music 30.360 for students who possess a displayed aptitude for composition. The course centres around the writing of original works of substantial proportions and for a variety of media. Students are encouraged to prepare some of their music for public performance.

Precludes additional credit for Music 30.496.

Prerequisite: Music 30.360 or permission of the Discipline.

Seminars one hour a week.

Music 30.470★

**Advanced Theoretical Studies**

A study of selected topics in music theory.

Prerequisite: Music 30.370★ or permission of the Discipline.

Seminars three hours a week.

Music 30.471★

**Jazz Styles and Structures: Arranging and Composition**

This course is a continuation of Music 30.371★. Techniques of arranging and composition for small and large ensemble will be studied through examination of selected works drawn from the jazz repertoire. There will be an emphasis on practical written skills and students will be encouraged to prepare both standard and original works for public performance.

Prerequisite: Music 30.371★ or permission of the Discipline.

Seminars three hours a week

Music 30.473★

**Performance Practice**

A seminar to examine how music in earlier periods of the Western tradition was performed, the "authentic" movement of the twentieth century, and the boundaries within which compositions of Asian high cultures and jazz and popular music standards can be realized.

Prerequisite: Permission of the Discipline.

Seminars three hours a week.



**Music 30.477 ★**

**History of Music Theory**

Case studies drawn from a wide range of theoretical writings from the ancient world to the present provide the core of this seminar. The course is designed in such a way as to allow for the exploration of particular interests of individual students, while at the same time providing a broader overview of the history of music theory.

Prerequisite: Permission of the Discipline.

Seminars three hours a week.

**Music 30.480 ★**

**Practicum in Music**

Practical experience in music-specific projects such as recording studios, librarianship, research, multimedia, etc. at local institutions. A maximum of one credit of practicum may be offered in fulfillment of Music requirements.

Prerequisites: Honours Music registration with Third- or Fourth-year standing and a B+ or better average in Music courses; or permission of the Discipline.

**Music 30.481 ★**

**Practicum in Music**

Practical experience in music-specific projects such as recording studios, librarianship, research, multimedia, etc. at local institutions. A maximum of one credit of practicum may be offered in fulfillment of Music requirements.

Prerequisites: Honours Music registration with Third- or Fourth-year standing and a B+ or better average in Music courses; or permission of the Discipline.

**Music 30.490 ★**

**Performance IV**

A continuation of Music 30.390 ★ for B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration is restricted to students in the B.Mus. program only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

This course *may not* be taken in addition to or concurrently with Music 30.497.

Prerequisite: Fourth-year standing, Music 30.390 ★ or permission of the Discipline.

Individual tuition twenty hours a year.

**Music 30.492 ★**

**Instrumental Ensemble IV**

Instrumental ensemble, a continuation of 30.392 ★.

Prerequisite: Fourth-year standing in the B.Mus program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

**Music 30.493 ★**

**Choral Ensemble IV**

Choral ensemble, a continuation of 30.393 ★.

Prerequisite: Fourth-year standing in the B.Mus. program.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

**Music 30.496**

**Honours Portfolio in Composition**

A project involving the composition and written analysis (of approximately 20 pages) of an original work of substantial length, prepared in consultation with the Discipline and an assigned adviser. This course is recommended for B.Mus. students wishing to undertake intensive study in composition. This course will be double-weighted in the calculation of the Music GPA.

Precludes additional credit for Music 30.460.

Prerequisite: Permission of the Discipline.

**Music 30.497**

**Graduating Recital**

Recommended for B.Mus students intending to continue performance studies. The course requires preparation of a public performance of at least one hour duration arranged in consultation with Director of Performance Studies and teacher.

This course will be double-weighted in the calculation of the Music GPA average. This course may not be taken in addition to or concurrently with Music 30.490 ★.

Prerequisites: Fourth-year standing and permission of the Discipline.

Individual tuition twenty hours a year.

**Music 30.498**

**Honours Essay in Musicology**

An Honours research essay of approximately 50 pages in length on a topic chosen in consultation with the Discipline and an assigned supervisor.

This course will be double-weighted in the calculation of the Music GPA.

Prerequisite: Permission of the Discipline.

## Graduate Courses

The following graduate courses can be found in the *Graduate Studies and Research Calendar*.

Music 50.501, 50.505, 50.510, 50.511, 50.512, 50.513, 50.515

### Graduate Studies in Music

# Philosophy

## (Arts and Social Sciences)

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2123 Dunton Tower  
Telephone: 520-2110

### Academic Administration

**Chair, J. Drydyk**  
**Supervisor of Graduate Studies, Marvin Glass**

**Supervisor of Honours Studies, Diane E. Dubrule**  
**Supervisor of B.A. Studies, Randal R.A. Marlin**

### Teaching Staff

**Professor Emeritus**

**James C.S. Wernham, M.A. (Aberdeen, Cambridge) S.T.M. (Union)**

#### Professors

**J. Andrew Brook, B.A., M.A. (Alberta), D.Phil. (Oxford) • Peter Emberley, B.A. (British Columbia), M.A. (Toronto), Ph.D. (London School of Economics)**

#### Associate Professors

**Wendy Donner, B.A. (Manitoba), M.A., Ph.D., (Toronto) • Jay Drydyk, B.A. (Chicago), M.A. (Notre Dame), Ph.D. (Toronto)**  
**• Béla I Egyed, B.A. (Sir George Williams), M.A., Ph.D. (McGill) • Marvin Glass, M.A. (Manitoba) • Andrew Jeffrey, M.A. (St. Andrews) • John W. Leyden, B.A. (Keele) • Randal R.A. Marlin, A.B. (Princeton), M.A. (McGill), Ph.D. (Toronto) • Robert J.H. Stalnton, B.A. (York), Ph.D. (Massachusetts Institute of Technology)**

#### Assistant Professor

**Diane E. Dubrule, A.B. (Cornell), B.C.S. (Carleton), M.A., Ph.D. (Toronto)**

#### Visiting Professor

**Will Kymlicka, B.A. (Queen's), B.Phil., Ph.D. (Oxford)**

#### Adjunct Research Professors

**Louis Charland • Christine Koggel**

#### Adjunct Professors

**Stanley G. Clarke • Joseph McDonald • Stephen Talmage • James M. Thompson • Julian Wolfe**

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### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those for First Year Seminars and Breadth courses (see p. 72), in addition to all Major regulations and requirements as set out below.

### Courses Open to First-Year Students

The following courses are open to First-year students: Philosophy 32.110, 32.150, 32.160 (full credits); 32.101★, 32.102★, 32.151★, 32.184★, 32.201★, 32.203★ (half-credits). Please note that not all of these courses are offered each year. No more than 2.0 credits at the 100-level may be used to satisfy requirements for graduation in any degree program.

### B.A. (Honours) Program

The Honours program may be entered at the beginning of the First year or by transfer from the B.A. program. Students intending to

enter the Honours program are advised to include 1.0 credit in Philosophy at the 100-level in the First-year program. In certain circumstances this requirement will be waived for students entering the Honours or Combined Honours program after the First year, who may be permitted to substitute an upper-year credit in Philosophy.

The Honours program consists of 20.0 credits with at least 10.0 credits in Philosophy. A minimum of 9.0 credits in Philosophy must be beyond the 100-level. The program for the Second and subsequent years is planned in consultation with the Department. Courses must be chosen according to the following requirements:

1. 3.0 credits in the history of philosophy: 32.206★, 32.209★, 32.304★, and 32.306★ and 1.0 additional credit;
2. 2.0 credits in ethics, society and aesthetics;
3. 2.0 credits in language, mind and knowledge;
4. 2.0 credits at the 400-level or above in Philosophy.

Courses falling within the foregoing groups are:



*History of Philosophy:* 32.206★, 32.207★, 32.208★, 32.209★, 32.222★, 32.223★, 32.301★, 32.304★, 32.306★, 32.307★, 32.308★, 32.314★, 32.315★;

*Ethics, Society and Aesthetics:* 32.211★, 32.212★, 32.214★, 32.221★, 32.236★, 32.237★, 32.284★, 32.286★, 32.287★, 32.311★, 32.312★, 32.313★, 32.330, 32.340, 32.341★, 32.342★, 32.348★;

*Language, Mind and Knowledge:* 32.201★, 32.231★, 32.245★, 32.251★, 32.254★, 32.331★, 32.332★, 32.336★, 32.351★, 32.354★, 32.356★.

#### Combined Honours Programs

In Combined Honours programs the Philosophy requirements are 7.0 credits, to include 6.0 credits beyond the 100-level of which 1.0 credit must be at the 400-level or above and must be taken at Carleton. Combined Honours programs are available in Philosophy with the following subjects: Art History, Biology, Economics, English, French, Greek, German, History, Journalism, Law, Linguistics, Mathematics, Political Science, Psychology, Religion, Sociology-Anthropology and Women's Studies. Details of the specific requirements for these programs may be obtained from the Department. Special arrangements may be made for other combinations. Students proposing other combinations must consult the Honours Adviser.

#### Specialization in Philosophy, Ethics and Public Affairs

A student may take up to 12.0 credits in Philosophy and up to 3.0 additional credits in Political Science towards a B.A. (Honours) Specialization in Philosophy, Ethics and Public Affairs. Students intending to take this Specialization are strongly encouraged to include either a First Year Seminar in Philosophy or a 1.0 Philosophy credit at the 100-level (especially 32.150) in their First year program. The requirements are:

1. 32.211★, 32.212★, 32.313★, 32.330.
2. at least 2.0 credits chosen from: 32.150, 32.184★, 32.214★, 32.221★, 32.222★, 32.236★, 32.237★, 32.284★, 32.290, 32.311★, 32.312★, 32.348★.
3. Political Science 47.230 and 2.0 Political Science credits chosen from: 47.319★, 47.333, 47.334, 47.335★, 47.431★, 47.432★, 47.434, 47.436★, 47.437★.
4. 1.5 credits in History of Philosophy (see list on p. 362);
5. 1.0 credit in Language, Mind and Knowledge (see list on p. 362);
6. 2.0 credits at the 400-level or above in Philosophy.

#### B.A. Program

Students in the B.A. program in Philosophy will present a minimum of 6.0 credits in Philosophy including 5.0 credits beyond the 100-level.

These credits must be chosen to include 1.0 credit in History of Philosophy. History of Philosophy courses are: 32.206★, 32.207★, 32.208★, 32.209★, 32.222★, 32.223★, 32.301★, 32.304★, 32.306★, 32.307★, 32.308★, 32.309★, 32.314★, 32.315★.

Special arrangements will be made for students proposing a Combined B.A. program. The normal requirement in Philosophy is 5.0 credits, including 4.0 credits beyond the 100-level.

All B.A. and Combined B.A. program students will arrange their programs in consultation with the Department.

#### Minor in Philosophy

A minor in Philosophy will consist of 4.0 credits in Philosophy, to include at least 3.0 credits beyond the 100-level.

In addition to a general minor in Philosophy, the following minors are also offered:

*Philosophy, Ethics and Public Affairs:* 4.0 credits chosen from courses in the philosophy, ethics and public affairs group, to include:

1. Philosophy 32.150 or Political Science 47.230;
2. 32.211★ and 32.212★;
3. 32.330;
4. 1.0 credit chosen from: 32.184★, 32.214★, 32.221★, 32.222★, 32.236★, 32.237★, 32.284★, 32.311★, 32.312★, 32.313★, 32.348★.

*History of Philosophy:* 4.0 credits in Philosophy to include:

1. 32.110 or 32.160;
2. 32.206★ and 32.209★;
3. 32.304★ and 32.306★;
4. 1.0 credit chosen from: 32.207★, 32.208★, 32.211★, 32.221★, 32.222★, 32.223★, 32.301★, 32.307★, 32.308★, 32.314★, 32.315★.

*Philosophy of Mind:* 4.0 credits in Philosophy to include:

1. 32.151★ and 32.201★;
2. 32.231★ and 32.254★;
3. 32.251★ and 32.252★;
4. 1.0 credit chosen from: 32.209★, 32.231★, 32.304★, 32.306★, 32.314★, 32.315★, 32.331★, 32.332★, 32.351★.

*Philosophy of Language:* 4.0 credits to include:

1. 32.151★ (or Mass Communication 27.100);
2. 32.201★, 32.232★, 32.254★, 32.354★ and 32.356★;
3. 1.5 (1.0 if 27.100 is offered) credits chosen from: 32.308★, 32.314★, 32.315★, or 32.336★.

*Philosophy of Journalism and Mass Communication:* 4.0 credits in Philosophy to include:

1. 1.0 credit chosen from 100-level courses in Philosophy;
2. 32.290;
3. 32.254★ and 32.203★;
4. A further 1.0 credit chosen from: 32.184★, 32.211★, 32.212★, 32.221★, 32.231★, 32.236★, 32.237★, 32.284★, 32.330, 32.332★, or 32.348★.

#### "Mention: français"

Students in the B.A. (Honours) or B.A. program in Philosophy may qualify for the notation "Mention: français" (p. 83) by fulfilling the requirements outlined. Those wishing to pursue this path should consult with the Department's B.A. or Honours adviser. Approval of the relevant adviser is required for all courses under the "Mention: français."

Philosophy courses presented in fulfillment of the "Mention: français" requirements can double as courses to satisfy Philosophy B.A. or B.A. (Honours) requirements.

#### B.A. (Honours) or Combined B.A. (Honours)

To graduate with the notation "Mention: français", students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French for the purpose of perfecting the student's French language skills.
2. 1.0 credit from the following list of courses taught in French at Carleton and concerned with the study of the heritage and culture of French Canada: French (20.270, 20.372★, 20.373★).
3. Either Philosophy 32.399 (Independent Study) with philosophical works read in French and papers submitted in French to be assessed by two members of the Department of Philosophy knowledgeable in the language, or 1.0 credit in Philosophy at the

300-level taught in French at another university and acceptable to the Department of Philosophy.

4. Either a special project (Philosophy 32.490 Tutorial) in French, supervised by a member of the Department of Philosophy or 1.0 credit earned in a Philosophy seminar or seminars at the 400-level taught in French at another university and acceptable to the Department of Philosophy. Students who choose the latter must, in addition, satisfy the Honours requirement of 2.0 Carleton credits at the 400-or 500-level in Philosophy (1.0 for Combined Honours).

5. Combined Honours students must meet the "Mention: français" requirements of both Honours disciplines.

### B.A. or Combined B.A.

To graduate with the notation "Mention: français", students must include in the program the following:

1. same as 1 above
2. same as 2 above
3. same as 3 above
4. Students in Combined B.A. programs must meet the "Mention: français" requirements of both disciplines.

## Graduate Program

The Department of Philosophy offers studies leading to the degree of Master of Arts. For information see the *Graduate Studies and Research Calendar*, or consult the departmental Graduate Studies Supervisor.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in Philosophy 01.128

### Looking at Philosophy

See course description on p. 86.

First-Year Seminar in Philosophy 01.129

### Contemporary Moral, Social, and Religious Issues

See course description on p. 86.

First-Year Seminar in Philosophy 01.130

### History of Philosophy

See course description on p. 86.

Philosophy 32.101 ★

### Ethics and Philosophy of Religion

An examination of arguments for and against the existence of God; the nature of religious language and the meaning and justification of moral judgments.

Lectures three hours a week.

Philosophy 32.102 ★

### Knowledge and Reality

Topics include the nature and definition of knowledge, perception and the nature of the external world, the status of necessary truths and of scientific knowledge.

Lectures three hours a week.

Philosophy 32.110

### Looking at Philosophy

Introduction to philosophy: the nature of logical thinking; the existence of God; the objectivity of values; the meaning of life; free will; determinism and responsibility; the relation between the mind and body; immortality and the possibility of knowledge.

This course is not intended for Majors (B.A. or Honours) in Philosophy.

Precludes additional credit for First-Year Seminar 01.128.

Lectures three hours a week.

Philosophy 32.150

### Contemporary Moral, Social and Religious Issues

Moral theories, atheism or theism, feminism, and free will. Moral arguments concerning abortion, affirmative action, racism, human rights, children's rights, world hunger, capital punishment, euthanasia, censorship, pornography, legal paternalism, animal rights and environmental protection.

Precludes additional credit for First-Year Seminar 01.129.

Lectures three hours a week.

Philosophy 32.151 ★

### Mind and Truth

An introduction to philosophy of mind and philosophy's contribution to cognitive science. Topics include: how mind is related to body; what free choice is and whether it is possible; what truth is and how philosophical truths differ from truths of psychology.

Precludes additional credit for Philosophy 32.106 ★.

Lectures three hours a week.

Philosophy 32.160

### History of Philosophy

Major figures and developments in philosophy from the early Greeks to the present. Descriptive and comparative approach, providing an understanding of the place of philosophers in the history of thought. Appreciation of critical reasoning is included for comprehending philosophical developments.

Precludes additional credit for First-Year Seminar 01.130.

Lectures three hours a week.

Philosophy 32.184 ★

### Introduction to Environmental Ethics

An introduction to major questions in environmental ethics, including: How should human beings view their relationship to the rest of nature? Is responsible stewardship of the environment compatible with current technology? Do distinct forms of life, for example endangered species, have value? Do animals, other life-forms, ecosystems and/or the biosphere have rights? Is the right to liberty and property compatible with protecting the environment and meeting our obligations to future generations?

Lectures three hours a week.

Philosophy 32.201 ★

### Introduction to Symbolic Logic

An introduction to the techniques and philosophical implications of formal logic with emphasis on the following issues: translation of expressions into symbolic form, testing for logical correctness, the formulation and application of rules of inference, and the relation between logic and language.

Open to First-year students.

Lectures three hours a week.

Philosophy 32.203 ★

### Informal Reasoning

Assessment of reasoning and the development of cogent patterns of thinking. Reference to formal logic is minimal. Practice in criticizing examples of reasoning and in formulating one's own reasons correctly and clearly.

Open to First-year students.

Precludes additional credit for Philosophy 32.120.

Lectures three hours a week.

Philosophy 32.206 ★

### Greek Philosophy: Plato and Aristotle

A study, both historical and critical, of some central issues in the philosophy of Plato and of Aristotle. (This course is also listed as Classical Civilization 13.206 ★)

Precludes additional credit for Philosophy 32.205.

Prerequisite: At least 0.5 credit in Philosophy or Second-year standing.

Lectures three hours a week.

Philosophy 32.207 ★

### Hellenistic and Early Medieval Philosophy

The evolution of western philosophy from the fourth through the twelfth century: theories of human nature, knowledge and reality are traced from the Hellenistic philosophers through the early medieval syntheses of reason with Christianity. Several thinkers (e.g. Plotinus, Augustine and Anselm) are studied in depth. (Also listed



as Classical Civilization 13.207★)

Precludes additional credit for Philosophy 32.225.

Prerequisite: Philosophy 32.206★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.208★**

**Philosophy in the Late Middle Ages, Renaissance and Reformation**

The evolution of western philosophy from the scholasticism of the high middle ages to the humanism of the Renaissance and the scepticism and fideism of the Reformation and Counter-Reformation period. Several thinkers such as Aquinas, Montaigne and Francis Bacon are studied in depth.

Precludes additional credit for Philosophy 32.225.

Prerequisite: Philosophy 32.206★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.209★**

**Early Modern Philosophy: the Rationalists**

European philosophy of the seventeenth and early eighteenth century. Representative works of writers such as Descartes, Spinoza and Leibniz.

Precludes additional credit for Philosophy 32.215.

Prerequisite: Philosophy 32.206★, 32.207★ or 32.209★; or permission of the Department.

Lectures three hours a week.

**Philosophy 32.211★**

**History of Ethics**

An introduction to ethical theories through a study of some of the major figures in moral philosophy, such as Aristotle, Hume, Kant and Mill.

Prerequisite: At least 0.5 credit in Philosophy or Second-year standing.

Lectures three hours a week.

**Philosophy 32.212★**

**Contemporary Ethical Theory**

Critical study of the main types of modern ethical theories, their views on the nature of morality and the justification of moral claims. Topics utilitarianism, libertarianism, communitarianism, egoism, neo-Kantianism, virtue ethics, social contract ethics, feminist ethics, and moral rights.

Prerequisite: Philosophy 32.211★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.214★**

**Computer Ethics**

Ethical issues arising from computing. The influence of computers on work, social power, privacy, computer crime, intellectual property rights. Ethical problems posed by research areas such as artificial intelligence, artificial life, expert systems, neural nets, virtual reality and robotics.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures three hours a week.

**Philosophy 32.221★**

**Introduction to Marxist Philosophy**

The evolution of Marx's social and political views in the setting of 18th and 19th century anarchism, liberalism and conservatism. Themes of humanism, freedom, rights, the state, democracy, alienation, and inequality, primarily as they develop into the theory of historical materialism.

Precludes additional credit for Philosophy 32.220.

Prerequisite: At least 0.5 credit in Philosophy or permission of the Department.

Lectures three hours a week.

**Philosophy 32.222★**

**Topics in Marxist Philosophy**

The dialectical materialism of Marx, Engels, and Lenin is compared with traditional materialist, idealist, and mechanist philosophy. Marxist views on justice, equality, ethical objectivity, and human well-being. Contemporary issues such as the former Soviet Union and racism and censorship.

Precludes additional credit for Philosophy 32.220.

Prerequisite: 32.221★ or at least 0.5 credit in the history of philosophy at the 200-level or above.

Lectures three hours a week.

**Philosophy 32.223★**

**Existentialism and Phenomenology**

A study of the views of such writers as Kierkegaard, Husserl, Merleau-Ponty, Heidegger and Sartre.

Precludes additional credit for Philosophy 32.270.

Prerequisite: At least 0.5 credit in the history of philosophy at the 200-level or above or permission of the Department.

Lectures three hours a week.

**Philosophy 32.231★**

**Introduction to the Philosophy of Science**

The scientific view of the world, scientific revolutions and the growth of knowledge and objectivity. Specific attention to fundamental concepts such as observations, explanation, causation and induction.

Precludes additional credit for Philosophy 32.200.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures three hours a week.

**Philosophy 32.236★**

**Philosophy and Feminism**

A study of philosophical issues arising from feminism. The course includes discussions of the relations between feminism, reason and ideological commitment, as well as critical evaluation of contemporary views on selected topics (e.g. abortion, pornography and censorship, affirmative action, and beauty).

Prerequisite: At least 0.5 credit in Philosophy or Second-year standing.

Lectures two and one half hours a week.

**Philosophy 32.237★**

**Topics in Feminist Philosophy**

An examination of issues such as science and gender, feminist epistemology, feminism and post modernism and feminist ethics. In connection with these issues, practical applications are given consideration.

Prerequisite: Philosophy 32.236★ or permission of the Department.

Lectures two and one half hours a week.

**Philosophy 32.245★**

**Philosophy of the Paranormal**

Examination of claims, concepts, theories and methods in parapsychology. Their scientific character and the relation of paranormal phenomena to philosophical issues such as survival of death, human nature, time, space, causality and perception.

Prerequisite: At least 0.5 credit in Philosophy or permission of the Department.

Lectures three hours a week.

**Philosophy 32.251★**

**Personal Identity and the Self**

Personal identity and the relation of mind to body. Different meanings of 'personal identity' in philosophy and psychology. Leading contemporary views of the mind/body problem and the problem of our knowledge of other minds, with special emphasis on problems with introspection.

Prerequisite: At least 0.5 credit in Philosophy or permission of the Department.

Lectures three hours a week.

**Philosophy 32.252★**

**Philosophy of Mind**

Contemporary work on major philosophical issues concerning human cognition and the role of philosophy in cognitive science. Topics include: the mind as an intentional system and as a representational system; mental realism; consciousness; artificial intelligence; the concept of mental illness.

Prerequisite: Philosophy 32.106★, 32.151★ or 32.251★.

Lectures three hours a week.



**Philosophy 32.254★****Language and Communication**

Some of the central topics in the study of language and communication as pursued by linguists and philosophers. The nature of meaning; the connections between language, communication and cognition; language as a social activity. (Also listed as Mass Communication 27.254★ and Linguistics and Applied Language Studies 29.254★)

Precludes additional credit for Mass Communication 27.280, Linguistics 29.280 and Philosophy 32.280.

Prerequisite: Second-year standing.

Lectures three hours a week.

**Philosophy 32.260****Philosophy of Religion**

A philosophical examination of some characteristic concepts of religion, such as faith, hope, worship, revelation, miracle, God. (Also listed as Religion 34.260.)

Prerequisite: A course in Philosophy or Second-year standing.

Lectures three hours a week.

**Philosophy 32.284★****Environments, Technology and Values**

An advanced treatment of some ethical issues concerning technology and the built and natural environment, including: sustainable development and the idea of progress, women and the environment, the value of biological diversity, the relation of human beings to the rest of the natural world, whether non-human beings have intrinsic value or rights, triage and distributive justice, obligations to future generations, and the conflict between liberty and equality.

Prerequisite: Philosophy 32.184★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.286★****Art and Ideas: From Ancient Greece to the Twentieth Century**

A survey of theories that have shaped the Western approach to art and art criticism, including Plato, Aquinas, Kant, Hegel and Nietzsche. (Also listed as Art History 11.286★.)

Lectures three hours a week.

**Philosophy 32.287★****Art and Ideas: The Twentieth Century**

A survey of theories that have shaped the Western approach to art and art criticism including psychological, sociological, phenomenological, semiotic and aesthetic approaches and including such thinkers as Freud, Arnheim, Marx, Heidegger, Barthes and Bell. (Also listed as Art History 11.287★.)

Lectures three hours a week.

**Philosophy 32.290****Truth and Propaganda**

Ancient and modern techniques of persuasion from analytical, ethical and jurisprudential perspectives. Objectivity and bias, advertising and public relations ethics, the viability of democracy in the light of pressures on and within the modern mass media. (Also listed as Mass Communication 27.290.)

Prerequisite: At least 0.5 credit in Philosophy or Second-year standing.

Lectures three hours a week.

**Philosophy 32.301★****Early Greek Philosophy**

A study of the presocratic Greek philosophers and of the Sophists and Socrates. (Also listed as Classical Civilization 13.301★).

Preclude s additional credit for Philosophy 32.205.

Prerequisite: Philosophy 32.206★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.304★****Early Modern Philosophy: the Empiricists**

British philosophy of the late seventeenth and eighteenth century. Representative works of writers such as Locke, Berkeley and Hume.

Precludes additional credit for Philosophy 32.215.

Prerequisite: At least 0.5 credit in the history of philosophy at the 200-level or above, or permission of the Department.

Lectures three hours a week.

**Philosophy 32.306★****German Idealism**

The development of German idealism from Kant to Hegel.

Precludes additional credit for Philosophy 32.305.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Philosophy 32.307★****Reactions to German Idealism**

A comparative study of reactions to German Idealism through examination of authors such as Schopenhauer and Nietzsche.

Precludes additional credit for Philosophy 32.305.

Prerequisite: At least 0.5 credit in the history of philosophy at the 200-level or above or permission of the Department.

Lectures and seminar three hours a week.

**Philosophy 32.308★****Hermeneutics, Critical Theory and Deconstruction**

A study of the views of such writers as Gadamer, Habermas, Foucault and Derrida.

Precludes additional credit for Philosophy 32.270.

Prerequisite: At least 0.5 credit in the history of philosophy at the 200-level or above or permission of the Department.

Lectures and seminar three hours a week.

**Philosophy 32.311★****Philosophy of Law: The Nature of Law**

This course examines the concept of law, and of those concepts that are commonly associated with it, viz. rules, obligations, authority, coercion, and force. (Also listed as Law 51.311★.)

Prerequisite: At least 0.5 credit in Philosophy or permission of the Department.

Lectures three hours a week.

**Philosophy 32.312★****Philosophy of Law: The Logic of Law**

This course examines legal reasoning and analyzes concepts of particular significance to the law. These include justice, rights and duties, liability, punishment, ownership and possession. (Also listed as Law 51.312★.)

Prerequisite: Philosophy 32.311★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.313★****Moral Communication and Knowledge**

Moral discourse and language use, focusing on how moral claims may be justified and whether moral knowledge is possible. Topics may include: theories of moral communication and justification; objectivity; realism and relativism; the role of community and culture; Eurocentrism; morality and gender.

Prerequisite: Philosophy 32.211★ or 32.212★ or permission of the Department

Lectures three hours a week.

**Philosophy 32.314★****The Roots of Analytic Philosophy**

In the context of the work of such writers as Frege and Bradley, a discussion of early philosophical works of Russell, Moore and Wittgenstein. In addition some early representatives of positivism and pragmatism will be examined.

Precludes additional credit for Philosophy 32.380.

Prerequisite: At least 2.0 credits in the history of philosophy at the 200-level or above or permission of the Department.

Lectures and seminar three hours a week.

**Philosophy 32.315★****Analytic Philosophy**

Works of representative writers since 1945, including Quine, Wittgenstein and more recent figures.

Precludes additional credit for Philosophy 32.380.

Prerequisite: At least 2.0 credits in the history of philosophy at the



200-level or above or permission of the Department.  
Lecture and seminar three hours a week.

**Philosophy 32.330**

**Social and Political Philosophy**

A critical examination of major perspectives in social and political philosophy, such as classical and contemporary liberalism, theories of solidarity and general will, feminism, contractarianism, Marxism, libertarianism, and communitarianism. The course will explore the bearing of these views on topics such as the state, political power and authority, democracy, majority rule, rights, human rights, justice, equality, freedom, the public and the private, and international relations.

**Prerequisite:** At least 0.5 credit in Philosophy or permission of the Department.

Lectures two and one half hours a week.

**Philosophy 32.332 ★**

**Issues in the Philosophy of Social Science**

Theoretical and practical issues arising in the study of social phenomena, including the uniqueness of the social sciences, the features they share with the natural sciences, and criteria for their success. Positivism, structuralism, and critical theory will be discussed.

**Prerequisite:** A course in Philosophy or Second-year standing.

Lectures three hours a week.

**Philosophy 32.336 ★**

**Symbolic Logic**

A review of the basic techniques of propositional and predicate logic. Natural deduction and consistency trees. Soundness and completeness. Alternative semantics. Extensions to basic logic: identity, modal logic with possible world semantics, three valued systems, deontic logic.

Precludes additional credit for Philosophy 32.335.

**Prerequisite:** Philosophy 32.201 ★ or permission of the Department.

Lectures three hours a week.

**Philosophy 32.340**

**Aesthetics**

Analysis of problems in the description, interpretation and evaluation of works of art, including music, literature and the visual arts, together with the study of types of aesthetic theory.

Precludes additional credit for Philosophy 32.240.

**Prerequisite:** At least 0.5 credit in Philosophy or Second-year standing.

Seminar two hours a week.

**Philosophy 32.341 ★**

**Aesthetics**

The first half of Philosophy 32.340, Aesthetics. (For Architecture students only.)

Precludes additional credit for Philosophy 32.241 ★.

**Prerequisite:** Permission of the Department. Only for students who will take Philosophy 32.342 ★ in a later year.

Seminar two hours a week.

**Philosophy 32.342 ★**

**Aesthetics**

The second half of Philosophy 32.340, Aesthetics.

Precludes additional credit for Philosophy 32.242 ★.

**Prerequisite:** At least 0.5 credit in Philosophy or Second-year standing.

Seminar two hours a week.

**Philosophy 32.348 ★**

**Bioethics**

Philosophical topics such as the nature and implications of personhood, privacy, and rights in the context of medical practice and health care.

**Prerequisite:** Philosophy 32.211 ★ or 32.212 ★; or permission of the Department.

Lectures three hours a week.

**Philosophy 32.351 ★**

**Philosophy of Computing Science and Artificial Intelligence**

Theoretical issues connected with computer science. How computers can help answer philosophical questions and philosophical issues that arise from computing. Issues surrounding machine cognition such as theoretical limits to computing, symbolic vs. connectionist models, and whether computers can think.

**Prerequisite:** 1.0 credit in Philosophy or Second-year standing in Computer Science.

Seminar two hours a week.

**Philosophy 32.354 ★**

**Pragmatics**

The theoretical study of language use, as pursued by linguists and philosophers. Conversational implicature, deixis; the semantics-pragmatics boundary; speaker's reference; speech acts. (Also listed as Mass Communication 27.354 ★ and Linguistics and Applied Language Studies 29.354 ★.)

Precludes additional credit for Mass Communication 27.280, Linguistics and Applied Language Studies 29.280 and Philosophy 32.280.

**Prerequisite:** At least 0.5 credits in Philosophy or Linguistics and Applied Language Studies or Second-year standing.

Lectures three hours a week.

**Philosophy 32.356 ★**

**Semantics**

The study of meaning as a part of the study of communication. Organization of the semantic structure of language, and the relation of this structure to the lexicon. (Also listed as Linguistics 29.356 ★.)

**Prerequisite:** At least 0.5 credit in Philosophy or Linguistics; or permission of the department.

Lecture three hours a week.

**Philosophy 32.391 ★,**

**Independent Study**

Essays and/or examinations based on a list of readings provided by the instructor.

**Prerequisite:** Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses and permission of the Department.

**Philosophy 32.392 ★,**

**Independent Study**

Essays and/or examinations based on a list of readings provided by the instructor.

**Prerequisite:** Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses and permission of the Department.

**Philosophy 32.393 ★,**

**Independent Study**

Essays and/or examinations based on a list of readings provided by the instructor.

**Prerequisite:** Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses and permission of the Department.

**Philosophy 32.396 ★**

**Independent Study**

Essays and/or examinations based on a bibliography constructed by the student in consultation with the instructor.

**Prerequisite:** Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses and permission of the Department.

**Philosophy 32.397 ★**

**Independent Study**

Essays and/or examinations based on a bibliography constructed by the student in consultation with the instructor.

**Prerequisite:** Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses and permission of the Department.

**Philosophy 32.398 ★****Independent Study**

Essays and/or examinations based on a bibliography constructed by the student in consultation with the instructor.

Prerequisite: Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses and permission of the Department.

**Philosophy 32.401 ★****Philosophy of Language**

(Also listed as Linguistics 29.403★.)

Prerequisite: Fourth-year Honours standing in a Linguistics or Philosophy program or permission of either Department.

Seminar two hours a week.

**Philosophy 32.402 ★****Philosophy of Social Science**

Current practices of theory-building, confirmation and explanation in the social sciences are studied. Issues such as the following are addressed: Does science form a unity? In what manner can one theory or science be reduced to another? Should standards for confirmation vary from one science to another? Is there any privileged form of explanation?

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.411 ★****Philosophy of Action**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.421 ★****Epistemology**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.431 ★****Philosophy of Logic**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.441 ★****Contemporary Moral or Political Philosophy**

An intensive study of recent works in one or both of these areas.

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.451 ★****Philosophy and Theories of Mentality**

A study of some philosophical issues arising from psychology, biology, cognitive science and neuroscience.

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.461 ★****Philosophy of Religion**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.471 ★****Special Topic in Greek Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.472 ★****Special Topic in Greek Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.473 ★****Special Topic in Medieval Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.474 ★****Special Topic in Medieval Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.475 ★****Special Topic in Early Modern Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.476 ★****Special Topic in Early Modern Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.477 ★****Special Topic in Nineteenth Century Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.478 ★****Special Topic in Nineteenth Century Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.479 ★****Special Topic in Twentieth Century Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.480 ★****Special Topic in Twentieth Century Philosophy**

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

**Philosophy 32.490****Tutorial**

Prerequisite: Permission of the Department.

**Philosophy 32.491 ★, 32.492 ★, 32.493 ★, 32.494 ★, 32.496 ★****Tutorial**

Prerequisite: Permission of the Department.

**Note:** Students who wish to enrol in a tutorial course must consult the Honours Adviser, *before* registration.



# Physics (Science)

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Herzberg Building  
Telephone: 520-4377

## Academic Administration

Chair, J.C. Armitage

Associate Chair of Undergraduate Studies, W.J. Romo

Associate Chair of Graduate Studies (Associate Director,  
Ottawa-Carleton Institute for Physics), D. Karlen

## Teaching Staff

### Professors

**J.C. Armitage**, B.Sc. (London), Ph.D. (Manchester) • **R.K. Carnegie**, B.Sc. (Queen's), M.A. (Toronto), Ph.D. (Princeton) • **Leslie A. Co-pley**, B.Sc. (Carleton), M.Sc. (McMaster), Ph.D. (Toronto) • **Kenneth W. Edwards**, B.S.E. (Michigan), Ph.D. (Princeton) • **William J. Romo**, B.Sc., M.Sc. (Oregon), Ph.D. (Wisconsin) • **P.J.S. Watson**, B.Sc. (Edinburgh), Ph.D. (Durham)

### Associate Professors

**Stephen Godfrey**, B.A.Sc. (Toronto), M.Sc. (Weizmann Institute), Ph.D. (Toronto) • **Paul C. Johns**, B.A.Sc., M.Sc., Ph.D. (Toronto) • **Patricia Ann Kalyniak**, B.Sc. (Calgary), M.Sc., Ph.D. (British Columbia) • **D.A. Karlen**, B.Sc. (Alberta), Ph.D. (Stanford) • **Lazer Resnick**, B.Sc. (McGill), Ph.D. (Cornell) • **Gilles E. Santyr**, B.Sc. (Queen's), Ph.D. (Toronto)

### Assistant Professor

**Boguslaw J. Jarosz**, M.Sc., Ph.D. (Warsaw)

### Instructor

**J.G. Boutin**, B.Sc., M.Sc. (Carleton)

### Visiting Professor

**Gerhard Herzberg**, Dr.Ing. (Darmstadt), M.A. (Saskatchewan), D.Sc., LL.D., F.R.S., F.R.S.C.

### Distinguished Research Professor

**M.K. Sundaesan**, M.Sc. (Delhi), Ph.D. (Cornell)

### Honourary Research Professors

**P.G. Estabrooks**, M.Sc., Ph.D. (Wisconsin) • **R.J. Hemingway**, Ph.D. (Oxford)

### Research Associates

**D. Koetke** • **P. Krieger** • **J. Wallace**

### Adjunct Research Professors

**I. Cameron**, Ottawa Regional Cancer Centre • **R.L. Clarke** • **J. Cygler**, Ottawa Regional Cancer Centre • **M. Dixit**, Centre for Research in Particle Physics • **L.H. Gerig**, Ottawa Regional Cancer Centre • **C. Greenstock**, A.E.C.L. • **C.K. Hargrove**, Centre for Research in Particle Physics • **M. Losty**, Centre for Research in Particle Physics • **B. McKee**, Ottawa Civic Hospital • **H.J.A.F. Mes**, Centre for Research in Particle Physics • **C. Ng**, Ottawa Regional Cancer Centre • **A. Noble**, C.R.P.P. • **G. Oakham**, Centre for Research in Particle Physics • **G.P. Raaphorst**, Ottawa Regional Cancer Centre • **D.W.O. Rogers**, National Research Council • **C. Ross**, National Research Council • **W.D. Sinclair**, Centre for Research in Particle Physics

### Sessional Lecturers

**L. Campbell** • **R.S. Dick** • **J. Hardy** • **I. Ivanovic**

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## General Information

Physics 75.101★ and 75.102★, with Mathematics 69.104★ and 69.114★ or equivalent, are the normal prerequisites for entry into Second-year Physics courses. Mathematics 69.107★ and 69.117★ are suitable alternatives. Students not directly admissible into

Mathematics 69.104★ or 69.107★ or equivalent, or not intending to take further courses in Physics, should take Physics 75.107★ and 75.108★, with Mathematics 69.007★ and 69.107★. If 75.107★ and 75.108★ are completed with a combined average of B- or better they may serve as prerequisites for Second-year Physics courses in place of 75.101★ and 75.102★.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 120), in addition to all departmental regulations and normal requirements as set out below.

### B.Sc. Honours Program in Applied Physics

Students who complete this program will have a choice of a science career applying physics in the industrial sector or further studies in graduate school. The Co-operative option, described below, offers students the possibility to mix academic study with work experience at one of the local high tech companies, government laboratories, or hospitals.

#### Entrance Criteria

Refer to the Faculty of Science regulations for entry into Honours programs (p. 116). Students from Ontario high schools must have OAC Physics and OAC Calculus. Although not a requirement, an OAC in Algebra and Geometry is recommended.

Students seeking admission to Honours Applied Physics who have already completed Physics 75.107★ and 75.108★ will be permitted to count them in place of 75.101★ and 75.102★ provided that they have a GPA of 7.0 or better over both courses.

#### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 120), in addition to all Departmental regulations and requirements as set out below.

#### Program Requirements

The program consists of 20.0 credits as follows:

1. 2.0 acceptable arts or social science credits;
2. 1.0 free elective credit;
3. 17.0 more credits chosen with the approval of the Department.

##### First Year

Physics 75.101★ and 75.102★;  
Mathematics 69.104★, 69.105★, and 69.114★;  
Computer Science 95.105★;  
one of Biology 61.103★ and 61.104★, Chemistry 65.100, or  
Geology 67.100;  
and 1.0 acceptable arts or social science credit.

##### Second Year

Physics 75.222★ and 75.264★;  
Mathematics 69.204★ and 69.375★;  
Engineering 94.266★, 97.251★ and 97.257★;  
either Computer Science 95.106★, and 95.202★ or 95.204★, or  
Engineering 94.202★ and 94.204★;  
0.5 Free Elective credit.

##### Third Year

Physics 75.307★, 75.366★, 75.371★, 75.382★, 75.387★, and  
75.449★;  
Mathematics 69.352★;  
Engineering 97.315★, 97.398★, and 97.399★.

##### Fourth Year

Physics 75.408★ and 75.477★;  
one of Physics 75.497★ plus 0.5 Free Elective, 75.498★ plus 0.5  
Free Elective, or 75.499;  
1.0 additional Physics credits at the 400-level;  
an additional 0.5 credit either in Physics at the 400-level or Com-  
puter Science 95.305★, or Electronics 97.359★;  
1.0 acceptable arts or social science credit;  
0.5 Free Elective.

## The Co-operative Education Option

General information on the Co-operative Education Option can be found on p. 39.

Co-operative education formally integrates the student's academic experience with work experience in industry and government. Work opportunities, which are available on a competitive basis, are coordinated to complement the student's course work and interests. Practical work experience provides insights and opportunities for development which cannot be learned in regular course work, and which help prepare an individual for a career in Physics.

#### Operation of the Co-operative Option

The option is administered by the Co-operative Program Committee which is responsible for securing potential employers, arranging interviews, and generally managing the program. The details of the program are to be found in the *Physics Co-op Student Handbook*, which describes the entry requirements, the job selection process, the conditions of employment, the requirements of the student during the work term including the Work Term Report and its evaluation.

#### Admission Requirements

This program is aimed at students who have obtained a mark of 80 percent or better in OAC Physics. To be eligible for entry, a student must:

1. be registered as a full-time student in one of the Physics Honours programs.
2. have an Honours GPA of 8.0 or better and an overall GPA of 6.5 or better.
3. be eligible to work in Canada.

Meeting the above requirements will only establish eligibility to enter the program. Enrollment in the Co-operative stream is limited and depends on the prevailing job market. Application forms for admission to the Co-operative stream are available from the Physics Departmental office and should be submitted before May 15, September 15 or January 15.

#### The Work/Study Sequence

The standard work term duration is four months; however, students may choose to work two terms in sequence adding up to eight months. The first work period (which is normally eight months in duration) will normally begin after completing the second year of the program of academic study as specified in the calendar under the heading of Honours program in Applied Physics. Students will return to the campus for the Winter term of academic year three and will then begin the second work period over the following summer. They can then take the Fall term courses of their third academic year (out of sequence) followed by the final work period. Students will return in the Fall to complete the fourth academic year, totalling five years in the program. The only split year in the program is academic year three. Students will be required to complete a minimum of four work terms.

If no suitable job placements can be made, the student will revert to the regular Applied Physics program.

#### Continuance in the Program

During work terms, students must register in one of the five Work Term Courses: 75.394★, 75.395★, 75.396★, 75.495★, or 75.496★ to be graded "Satisfactory" or "Unsatisfactory". To continue in the program students must successfully complete their work terms, one of the requirements of which is to hand in a Work Term Report judged to be "Satisfactory". The report requirements and evaluation criteria are described in the *Physics Co-op Student Handbook*, which also lists all the circumstances in which a student may be required to withdraw from the program. In addition,



the student must maintain the academic standards required for the co-operative education stream.

## Graduation Requirements

All work terms should normally be completed prior to starting the last academic term. In addition to satisfying the requirements of the Co-operative program as described above, a student must have completed the 20 credits specified for the Applied Physics program and four Work Term courses in the sequence mentioned above. Variations in the sequence may be requested due to academic or work situations in the upper years but these arrangements must have the prior approval of the Co-operative Program Committee.

Graduates successfully completing the above requirements, will receive a Co-operative degree designation in addition to the Honours designation.

## Graduate Program

The Department of Physics offers studies leading to the degrees of Master of Science and Doctor of Philosophy. There is a one-year industry-oriented M.Sc. program in Physics in Modern Technology and there are research-oriented M.Sc. and Ph.D. programs in medical physics and elementary particle physics. The requirements and general regulations are given in the *Faculty of Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Physics 75.101 ★

#### Introductory Physics I

This calculus-based course covers mechanics, gravitation, oscillations, and thermodynamics. The laboratory is an essential and autonomous part of the course. Designed for students continuing in the physical sciences or mathematics.

Precludes additional credit for Physics 75.105 and 75.107 ★.

Prerequisite: OACs in Physics and Calculus (or equivalents). Although not a requirement, an OAC in Algebra and Geometry is recommended. Mathematics 69.104 ★ or 69.107 ★ or 69.102 (may be taken concurrently); or permission of the Department.

Lectures three hours a week, tutorial one hour a week, laboratory three hours a week.

**Note:** This course is recommended for students who have obtained 65 percent or better in OAC Calculus.

### Physics 75.102 ★

#### Introductory Physics II

An introduction to electricity, magnetism and wave motion and optics. The laboratory is an essential and autonomous part of the course. For students continuing in the physical sciences or mathematics.

Precludes additional credit for Physics 75.105 and 75.108 ★.

Prerequisites: Physics 75.101 ★, Mathematics 69.104 ★ or 69.107 ★ or 69.102 (may be taken concurrently); or permission of the Department.

Lectures three hours a week, tutorial one hour a week, laboratory three hours a week.

### Physics 75.104 ★

#### Introductory Physics for Engineering Students

This calculus-based course introduces electricity, magnetism, oscillations, waves and optics. The laboratory is an essential and autonomous part of the course.

Precludes additional credit for Physics 75.102 ★, 75.105 and 75.108 ★.

Prerequisites: Enrolment in Engineering program or Industrial Design, and Mathematics 69.104 ★ or 69.107 ★, Engineering 91.111 ★. Lectures three hours a week, tutorial one hour a week, laboratory three hours a week.

### Physics 75.107 ★

#### Elementary University Physics I

Mechanics, properties of matter, thermodynamics. Applications chosen in part from the life sciences. For students who do not intend to take additional courses in Physics or who lack the prerequisites for Physics 75.101 ★.

Precludes additional credit for Physics 75.101 ★ and 75.105

Prerequisites: Mathematics 69.007 ★ (may be taken concurrently).

Lectures three hours a week, laboratory three hours a week.

### Physics 75.108 ★

#### Elementary University Physics II

Electricity and magnetism, DC and AC circuits, wave motion and light. Elements of modern physics. Applications chosen in part from the life sciences.

Precludes additional credit for Physics 75.102 ★ and 75.105.

Prerequisites: Physics 75.101 ★ or 75.107 ★; Mathematics 69.107 ★ (may be taken concurrently).

Lectures three hours a week, laboratory three hours a week.

### Physics 75.190

#### Introduction to Astronomy

Description of the known stellar, galactic and extra-galactic systems. Modern ideas concerning the structure, origin and evolution of the universe, pulsars and supernovae. Space-age astronomy and studies of the possible existence of extraterrestrial life. A 14-inch telescope is available for student use.

Precludes additional credit for Physics 75.223 ★.

Lectures two and one-half hours a week.

**Note:** Science students may only take this as a Free Elective.

### Physics 75.211 ★

#### Mechanics and Properties of Matter

Equations of motion for a single particle. Harmonic oscillation. Noninertial reference frames. Orbits in a central force field. Motion of systems of particles and of rigid bodies. Introduction to special relativity. Laboratory experiments in classical mechanics and properties of matter.

Prerequisites: Physics 75.101 ★ and 75.102 ★ (or 75.105 with a grade of B- or better); Mathematics 69.107 ★ and 69.117 ★, or Mathematics 69.102 and 69.112.

Lectures three hours a week, laboratory three hours a week, tutorials (optional) once a week.

### Physics 75.222 ★

#### Wave Motion and Optics

Physical optics based on electromagnetic theory, oscillator model for dispersion, absorption, scattering, Huygen's principle, reflection and transmission as coherent scattering. Interference, coherence length, diffraction, polarization, double refraction. Geometrical optics.

Prerequisites: Physics 75.101 ★, 75.102 ★, Mathematics 69.107 ★ and 69.117 ★ or Mathematics 69.102 and 69.112. (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained.)

Lectures three hours a week, laboratory three hours a week.

### Physics 75.223 ★

#### Astronomy

The observational basis of astronomy. The history of astronomy, properties of light, solar system observations and stellar astronomy.

Precludes additional credit for Physics 75.190 and 75.220.

Prerequisites: Physics 75.101 ★ and 75.102 ★ or 75.105 (with a grade of B- or better); or permission of the Department.

Lectures three hours a week.

### Physics 75.224 ★

#### Astrophysics and Cosmology

A discussion of stellar models, in particular stellar evolution and the end states of stars such as neutron stars and black holes. Galaxies and quasars; cosmology.

Precludes additional credit for Physics 75.190 and 75.220.

Prerequisite: Physics 75.223 ★ or permission of the Department.

Lectures three hours a week.



**Physics 75.235★****Electricity and Magnetism**

The theory of electric and magnetic fields is covered in some detail. Electrostatics, field intensities in various configurations of charges, Gauss' law, electrostatic energy. Dielectric materials, dipoles, dipole-dipole interaction, molecular polarizability. Steady currents, properties of electrical conductors. Magnetic effects of currents and motion of charges in electric and magnetic fields. Time varying currents, electromagnetic induction. Magnetic materials and magnetic measurements.

Prerequisites: Physics 75.101★, 75.102★, Mathematics 69.107★ and 69.117★, or 69.102 and 69.112 (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained).

Lectures three hours a week, laboratory three hours a week.

**Physics 75.236★****Physics of Electrical and Electronic Measurements I**

D.C. and A.C. circuit theory. Resonant circuits. Basic measuring devices, the oscilloscope; impedances, bandwidth, noise; vacuum tubes, transistors, useful approximations for circuit design; feedback, amplifier, oscillator; operational circuits; digital circuits and measuring devices. Lectures emphasize the physical basis and useful approaches to instrument use and design. Laboratory emphasizes modern digital instrumentation.

Prerequisites: Physics 75.101★, 75.102★ or permission of the Department. Physics 75.235★ is recommended as a prior course.

Lectures three hours a week, laboratory three hours a week.

**Physics 75.262★****Modern Physics I**

Provides a transition from classical to modern physics. Special relativity. Kinetic theory. Thermal radiation. Rutherford scattering, atomic models. Photoelectric effect, Compton scattering. Bohr theory of the hydrogen atom. Atomic energy states, optical spectra, lasers. X-rays. Radioactivity. Quantum mechanics.

Precludes additional credit for Physics 75.361★.

Prerequisites: Physics 75.101★, 75.102★, Mathematics 69.102, 69.112, (or Mathematics 69.107★ and 69.117★), Physics 75.211★, 75.235★. (Physics 75.105 is also acceptable in place of 75.101★ and 75.102★ provided a minimum grade of B- is obtained.)

Lectures three hours a week.

**Physics 75.264★****Modern Physics I**

The course is designed to provide a logical transition from classical to modern physics. Special relativity. Kinetic theory. Thermal radiation. Rutherford scattering, atomic models. Photoelectric effect, Compton scattering. Bohr theory of the hydrogen atom. Atomic energy states, optical spectra, lasers, X-rays. Radioactivity. Quantum Mechanics.

Precludes additional credit for Physics 75.211★, 75.235★ and 75.262★.

Prerequisites: Registration in the Applied Physics or Engineering Physics program and permission of the Department.

Lectures three hours a week and laboratory three hours a week.

**Physics 75.291★****Physics of the Environment I**

The study of physics is essential to the understanding of many contemporary environmental problems. This course examines energy transformations which directly or indirectly are the sources of much pollution. Among the topics considered are the use of fossil, bio-mass, solar and nuclear-energy sources; thermodynamical and practical limits to efficiency; thermal pollution; radioactivity and the effects of radiation; growth in energy use and estimates of reserves; the need for conservation and control.

Prerequisites: Physics 75.101★, 75.102★ or permission of the Department. (Physics 75.105 is also acceptable provided a minimum grade of C- is obtained).

Lectures three hours a week.

**Physics 75.292★****Physics of the Environment II**

This course can be taken as a continuation of Physics 75.291★ or independently. It carries forward the study of the relationship of physical principles to environmental problems. Topics considered include: air pollution, its measurement, abatement and pos-

sible effects on climate; transportation problems and alternatives; noise pollution, its measurement and possible consequences; communication.

Prerequisites: Physics 75.101★, 75.102★ or permission of the Department. (Physics 75.105 is also acceptable provided a minimum grade of C- is obtained.)

Lectures three hours a week.

**Physics 75.298★****Research in Physics**

Although progress in physics is often assumed to be a straightforward building on a previous base of knowledge, it, in fact, depends on imagination and speculation to a remarkable degree. This course examines how ideas in physics develop, how preconceived notions have prevented progress and how the interplay of theory and experiment are crucial. Seminars are given on current research topics. Students examine cultural and historical aspects of physics, and take part in a group project.

Prerequisites: Physics 75.101★ and Physics 75.102★; or 75.105 (with a minimum of B-); or permission of the Department.

Lectures, seminars and workshops three hours a week.

**Physics 75.300****Third-Year Laboratory**

Students complete a small number of independent projects in modern optics, holography, optical spectroscopy, nuclear spectroscopy, cosmic radiation, measurements, etc. Development of skills in laboratory techniques in design/construction of research apparatus.

Prerequisite: Physics 75.222★ and 75.235★, or permission of the Department.

Laboratory and seminar six hours a week, workshop three hours a week.

**Physics 75.301★****Advanced Physics Laboratory for Non-Physics Science Students**

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Laboratory and seminar six hours a week.

**Physics 75.302★****Advanced Physics Laboratory for Non-Physics Science Students**

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Laboratory and seminar six hours a week.

**Physics 75.307★****Selected Experiments from Physics 75.300**

Prerequisites: Physics 75.222★ and 75.235★; or permission of the Department.

Laboratory and seminar six hours a week.

**Physics 75.308★****Selected Experiments from Physics 75.300**

Prerequisites: Physics 75.222★ and 75.235★; or permission of the Department.

Laboratory and seminar six hours a week.

**Physics 75.335★****Physics of Electrical and Electronic Measurements II**

Analysis of a selection of currently important electronic devices using such concepts as Fourier analysis, noise, the transmission line: lock-in amplifier, analog to digital converter, charge sensitive detector, etc. Interfacing and programming small computers. The physical basis of operation and of limitations are emphasized.



Prerequisite: Physics 75.235★ and 75.236★ or permission of the Department.

Lectures three hours a week, laboratory three hours a week.

Physics 75.338★

**Electromagnetism**

Electrostatic field and magnetostatics. Examples involving Laplace's and Poisson's equations; vector potential; Faraday's laws of induction; waves in vacuum and dielectric media.

Prerequisites: Physics 75.235★ and 75.387★, or permission of the Department.

Lectures three hours a week.

Physics 75.342★

**Heat and Thermodynamics**

Zeroth, First, Second and Third Laws of Thermodynamics; enthalpy, Helmholtz and Gibbs functions and the Maxwell relations; phase transitions; thermodynamics of magnetism; cryogenics cooling by Joule-Thompson effect, adiabatic expansion of a gas, adiabatic demagnetization, helium dilution refrigeration; black body radiation; negative temperatures.

Prerequisites: Physics 75.211★ and 75.235★, Mathematics 69.207★, 69.208★, 69.217★ and 69.241★ or permission of the Department.

Lectures three hours a week.

Physics 75.364★

**Modern Physics II**

Elements of condensed matter physics - semiconductors, superconductivity. Modern optics. Elements of nuclear physics, fission and fusion methods for generating energy. Introduction to particle physics. Ionizing radiation: production, interaction with matter, detection. Medical physics: radiation biophysics, cancer therapy, imaging.

Prerequisites: Physics 75.262★, Physics 75.371★; or permission of the Department.

Lectures three hours a week.

Physics 75.366★

**Modern Physics II**

Elements of condensed matter physics - semiconductors, superconductivity. Modern optics. Elements of nuclear physics, fission and fusion methods for generating energy. Introduction to particle physics. Ionizing radiation: production, interaction with matter, detection. Medical physics: radiation biophysics, cancer therapy, imaging.

Precludes additional credit for Physics 75.300 and 75.364★.

Prerequisites: Registration in the Applied Physics or Engineering Physics program and permission of the Department.

Lectures three hours a week, laboratory every other week.

Physics 75.371★

**Elements of Quantum Mechanics**

Analysis of interference experiments with waves and particles; fundamental concepts of quantum mechanics, Schrodinger equation; angular momentum, atomic beams; hydrogen atom; atomic and molecular spectroscopy; Pauli principle; simple applications in the physics of elementary particles.

Precludes additional credit for Physics 75.362★.

Prerequisite: Physics 75.262★ or 75.361★ or permission of the Department.

Lectures three hours a week.

Physics 75.381★

**Classical Mechanics**

Introduction to Lagrangian and Hamiltonian mechanics: Poisson brackets, tensors and dyadics; rigid body rotations: introductory fluid mechanics coupled systems and normal coordinates; relativistic dynamics.

Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.207★, 69.208★, 69.217★, 69.241★ or permission of the Department.

Lectures three hours a week.

Physics 75.382★

**Mechanics and Classical Mechanics**

Motions of systems of particles and rigid bodies. Introduction to Special Relativity. Hamiltonian and Lagrangian Mechanics.

Precludes additional credit for Physics 75.211★ and 75.381★.

Prerequisite: Registration in the Applied Physics or Engineering Physics programs or permission of the Department.

Lectures three hours a week.

Physics 75.387★

**Mathematical Physics I**

Vector calculus; gradient, divergence, curl, Laplacian in various coordinate systems. Theorems of Gauss, Stokes and Green. Functions of a complex variable: analytic functions, contour integration, residue calculus. Fourier series, Fourier and Laplace transforms. Dirac delta function. Second order total differential equations, solution using transform methods.

Precludes additional credit for Mathematics 69.307★, 69.376★ and 70.307★, Physics 75.386.

Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.208★, 69.217★, 69.241★, or permission of the Department.

Lectures three hours a week.

Physics 75.388★

**Mathematical Physics II**

Solution of second-order total differential equations by Frobenius' method. Sturm-Liouville theory. Special functions: Legendre, Bessel, Hermite, Laguerre and associated functions. Partial differential equations: method of separation of variables, eigenfunctions and eigenvalues and eigenfunction expansions. Green's function techniques for solving inhomogeneous partial differential equations.

Precludes additional credit for Mathematics 69.304★, 69.375★, and Physics 75.386.

Prerequisites: Physics 75.387★ or Mathematics 70.307★; or permission of the Department.

Lectures three hours a week.

Physics 75.394★

**Co-operative Work Term Report I**

Provides practical experience for students enrolled in the Co-operative option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written and oral reports will be required.

Prerequisites: Registration in the Physics Co-operative option and permission of the Department.

Not transferable for academic credit.

Physics 75.395★

**Co-operative Work Term Report 2**

Provides practical experience for students enrolled in the Co-operative option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written and oral reports will be required.

Prerequisites: Registration in the Physics Co-operative option and permission of the Department.

Physics 75.396★

**Co-operative Work Term Report 3**

Provides practical experience for students enrolled in the Co-operative option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written and oral reports will be required.

Prerequisites: Registration in the Physics Co-operative option and permission of the Department.

Physics 75.400

**Fourth-Year Laboratory**

The student is expected to complete detailed projects involving some original planning in both concept and experimental technique. Projects are similar to Physics 75.300 but are of a more sophisticated nature.

Prerequisite: Physics 75.300 or 75.307★ or 75.308★.

Laboratory and seminar six hours a week.

Physics 75.407★

**Selected Experiments from Physics 75.400**

Prerequisite: Physics 75.300 or 75.308★.

Laboratory and seminar six hours a week.



Physics 75.408 ★

**Selected Experiments from Physics 75.400**

Prerequisite: Physics 75.300 or 75.307 ★ or 75.308 ★.

Laboratory and seminar six hours a week.

Physics 75.421 ★

**Topics in Astrophysics and Cosmology**

Stellar evolution, including, in particular, stellar modelling, main sequence stars, red giants and the end states of stars. Introduction to general relativity, black holes and related phenomena, big bang cosmology.

Prerequisites: Physics 75.223 ★, 75.224 ★, 75.262 ★ or 75.361 ★, 75.371 ★ or 75.362 ★; or permission of the Department.

Lectures three hours a week.

Physics 75.423 ★

**Physical Applications of Fourier Analysis**

Laplace transform and its application to electrical circuits. Fourier transform, convolution. Sampling theorem. Applications to imaging: descriptors of spatial resolution, filtering. Correlation, noise power. Discrete Fourier transform, FFT. Filtering of noisy signals. Image reconstruction in computed tomography and magnetic resonance. Integral transforms and their application to boundary value problems.

Precludes additional credit for Physics 75.424 ★.

Prerequisite: Physics 75.387 ★; or permission of the Department.

Lectures three hours a week.

Physics 75.428 ★

**Modern Optics**

Laser theory: stimulated emission, cavity optics, modes; gain and bandwidth; Gaussian beams; atomic and molecular lasers. Mode locking, Q switching. Diffraction theory, coherence, Fourier optics, holography, laser applications. Optical communication systems: nonlinear effects - devices, fiber optics, fiber sensors, integrated optics.

Precludes additional credit for Physics 75.427 ★.

Prerequisites: Physics 75.222 ★, 75.338 ★, 75.364 ★, 75.371 ★ or 75.362 ★; or permission of the Department.

Lectures three hours a week.

Physics 75.437 ★

**Electromagnetic Radiation**

Electromagnetic wave propagation in a vacuum, dielectrics, conductors, and ionized gases, reflection, refraction, polarization at the plane boundary between two media; waveguide and transmission line propagation; dipole and quadrupole radiation fields; antenna systems. Electromagnetic mass, radiation pressure. Tensor notation, transformation of the electromagnetic fields.

Prerequisites: Physics 75.338 ★, 75.381 ★, 75.387 ★ and 75.388 ★ (except for Mathematics and Physics Double Honours students), or permission of the Department.

Lectures three hours a week.

Physics 75.447 ★

**Statistical Physics**

Equilibrium statistical mechanics and its relation to thermodynamics. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics are derived, and applied in appropriate physical situations. Fluctuations. Kinetics and transport processes, including the Boltzmann transport equation and some of its applications.

Prerequisites: Physics 75.342 ★, 75.262 ★ or 75.361 ★, 75.371 ★ or 75.362 ★, 75.477 ★ (may be taken concurrently); or permission of the Department.

Lectures three hours a week.

Physics 75.449 ★

**Thermodynamics and Statistical Physics**

The three Laws of Thermodynamics, enthalpy, Helmholtz and Gibbs functions and the Maxwell relations. Equilibrium statistical mechanics and its relation to thermodynamics. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics.

Precludes additional credit for Physics 75.342 ★ and 75.447 ★.

Prerequisites: Registration in the Applied Physics or Engineering Physics program and permission of the Department.

Lecture three hours a week.

Physics 75.458 ★

**Solid State Physics**

An introduction to solid state physics. Topics include crystal structure, phonons and lattice vibrations, conductors, semiconductors, insulators and superconductivity.

Prerequisites: Physics 75.262 ★ or 75.361 ★, 75.371 ★ or 75.362 ★; or permission of the Department.

Lectures three hours a week.

Physics 75.462 ★

**Particle Physics**

Properties of leptons, quarks and hadrons. The fundamental interactions, conservation laws, invariance principles and quantum numbers. Resonances in hadron-hadron interactions. Three body phase space. Dalitz plots. Quark model of hadrons, mass formulae. Weak interactions, parity violation, decay of neutral kaons, CP violation, Cabibbo theory. Also offered at the graduate level, with additional or different requirements, as Physics 75.562, for which additional credit is precluded.

Prerequisite: Physics 75.477 ★ or permission of the Department.

Lectures three hours a week.

Physics 75.468 ★

**Nuclear Physics**

Ground state properties of nuclei, nuclear forces, nuclear levels. Qualitative treatment of Fermi gas model, liquid drop model, shell model and collective model. Alpha, beta and gamma radioactivities. Fission. Passage of particles through matter. Particle detectors. Elements of neutron physics and nuclear reactors.

Prerequisites: Physics 75.361 ★ and 75.362 ★ or permission of the Department.

Lectures three hours a week.

Physics 75.477 ★

**Introduction to Quantum Mechanics I**

The basic interpretative postulates of quantum mechanics are applied to simple one-dimensional problems, and angular momentum theory.

Prerequisites: Physics 75.371 ★ or 75.362 ★, 75.387 ★, 75.388 ★; or permission of the Department.

Lectures three hours a week.

Physics 75.478 ★

**Introduction to Quantum Mechanics II**

Scattering theory and application; bound state problems; approximation methods.

Prerequisite: Physics 75.477 ★ or permission of the Department.

Lectures three hours a week.

Physics 75.487 ★

**Computational Physics**

The UNIX operating system. Numerical methods for solving problems in linear algebra, interpolation, integration, root finding, minimization, and differential equations. Monte Carlo methods for simulation of random processes. Statistical methods for parameter estimation and hypothesis tests. Chaotic dynamics.

Also offered at the graduate level, with additional or different requirements, as Physics 75.502, for which additional credit is precluded.

Prerequisite: Permission of the department and an ability to program in FORTRAN, C, or C++.

Lectures three hours a week.

Physics 75.491 ★

**Special Topics in Physics**

Each year, at the direction of the Department, a course on a special topic may be offered.

Prerequisite: Permission of the Department.

Physics 75.495 ★

**Cooperative Work Term Report 4**

Provides practical experience for students enrolled in the Cooperative option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written and oral reports will be required.

Prerequisites: Registration in the Physics Co-operative education option and permission of the Department.



Physics 75.496★

**Cooperative Work Term Report 5**

Provides practical experience for students enrolled in the Co-operative option. To receive course credit students must receive satisfactory evaluations from their work term employer. Written and oral reports will be required.

Prerequisites: Registration in the Physics Co-operative education option and permission of the Department.

Physics 75.497★

**Fourth-Year Project**

Same as Physics 75.499 except that it extends over the Fall term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

A minimum of six hours laboratory or private study a week.

Physics 75.498★

**Fourth-Year Project**

Same as Physics 75.499 except that it extends over the Winter term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

A minimum of six hours laboratory or private study a week.

Physics 75.499

**Fourth-Year Project**

These are advanced projects of an experimental or theoretical nature with an orientation towards research. A written progress report, by mid-term for Physics 75.497★, 75.498★, and by mid-year for Physics 75.499, must be submitted to the student's supervisor prior to the last day for withdrawal from the course. A written and an oral report is required at the conclusion of the project.

Prerequisite: Permission of the Department.

A minimum of six hours laboratory or private study a week.

# Political Science

## (Public Affairs and Management)

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B640 Loeb Building  
Telephone: 520-2777  
Fax: 520-4064

### Academic Administration

**Chair,** Glen Williams

**Assistant Chair,** Andrea S. Chandler

**Supervisor of Graduate Studies,** Piotr Dutkiewicz

**Assistant Supervisor of Graduate Studies,**  
To be announced

**Supervisor of Undergraduate Studies,** Michael B. Dolan

### Teaching Staff

#### Professors Emeriti

Douglas G. Anglin • Henry B. Mayo • Kenneth D. McRae • Teresa Rakowska-Harmstone • Donald C. Rowat

#### Professors

Tom Darby, *A.B. (Mercer), M.A. (Georgia State), Ph.D. (York)* • Joan De Bardeleben, *B.A., M.A., Ph.D. (Wisconsin)* • M.B. Dolan, *A.B. (Harvard), M.A., Ph.D. (The American University)* • Peter Emberley, *B.A. (British Columbia), M.A. (Toronto), Ph.D. (London School of Economics)* • Carl G. Jacobsen, *B.A. (Carleton), M.Phil., Ph.D. (Glasgow)* • Maureen A. Molot, *B.A., M.A. (McGill), Ph.D. (California at Berkeley)* • Lynn K. Mytelka, *Ph.D. (Johns Hopkins)* • Waller R. Newell, *B.A., M.A. (Toronto), M.Phil., Ph.D. (Yale)* • Jon H. Pammett, *B.A., M.A. (Queen's), Ph.D. (Michigan)* • Harald von Riekhoff, *B.A. (Western Ontario), M.A., Ph.D. (Yale)* • Sharon Sutherland, *B.A., M.A. (Alberta), Ph.D. (Essex)* • Richard Van Loon, *B.Sc., M.A. (Carleton), Ph.D. (Queen's)* • Jill McCalla Vickers, *B.A. (Carleton), Ph.D. (London)* • Glen Williams, *B.A., M.A., Ph.D. (York)* • Conrad J. Winn, *B.A. (McGill), Ph.D. (Pennsylvania)*

#### Associate Professors

Jon Alexander, *M.A. (Southern Illinois), Ph.D. (Kansas)* • David Bellamy, *B.A. (Carleton), M.A. (Queen's)* • Scott E. Bennett, *B.A. (Chicago), M.A., Ph.D. (York)* • Chris Brown, *B.A. (Toronto), M.A., Ph.D. (Cornell)* • Vincent Della Sala, *B.A. (McGill), M.A. (New York), D. Phil. (Oxford)* • Piotr Dutkiewicz, *LL.M. (Warsaw), Ph.D. (Soviet Academy of Science)* • Linda Freeman, *B.A. (British Columbia), M.A., Ph.D. (Toronto)* • Barbara Jenkins, *B.A. (McGill), M.A. (Carleton), M.Phil., Ph.D. (Yale)* • C. Radha Jhappan, *B.A. (Oxford), M.A., Ph.D. (British Columbia)* • Laura Macdonald, *B.A. (Queen's), M.A., Ph.D. (York)* • Edward Osei-Kwadwo Prempeh, *B.A. (Ghana), M.A. (Alberta), Ph.D. (Carleton)* • Jeremy T. Paltiel, *B.A. (Toronto), M.A., Ph.D. (California at Berkeley)* • François Rocher, *B.Sc., M.Sc., Ph.D. (Montréal)* • Miriam Smith, *B.A. (McGill), M.A., M.Phil., Ph.D. (Yale)* • E.L. Tepper, *B.A. (Michigan), M.A. (American), Ph.D. (Duke)*

#### Assistant Professors

Andrea S. Chandler, *B.A. (Dalhousie), M.A. (Carleton), M.Phil., Ph.D. (Columbia)* • Daniel T. Osabu-Kle, *B.Eng. (Karachi), P.T.S.C. (Institute of Armament Technology), M.A., Ph.D. (Carleton)* • Fiona Robinson, *B.A. (Queen's), M.A. (Carleton), Ph.D. (Cambridge)*

#### Distinguished Research Professors

R.J. Jackson • V. Subramaniam

#### Adjunct Research Professors

Mildred A. Schwartz • Lennard Sillanpaa • Gregory Tardi

#### Adjunct Professors

B.R. Bociurkiw • P.V. Lyon • W.A. Mullins • G. Roseme • P.L. Rosen • J.H. Sigler • M.S. Whittington • V.S. Wilson

### General Information

Ottawa provides a wealth of resources, both in personnel and in research materials, for the student of government, politics, public administration and international relations. Undergraduates will be assisted in making the fullest use of these unique advantages of the national capital. The Department of Political Science offers courses in the following fields of study: Canadian government and politics, comparative institutions and politics, public administration and public policy, international relations, political theory and methodology.

Students should note that it is possible to combine a B.A. (Honours) or B.A. program in Political Science with a pattern of studies, such as urban studies, studies in developing areas, etc. Those wishing to do so should consult the Department for a suggested outline of courses.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those for



First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements set out below.

## Calculation of Political Science GPA

For the purpose of admission to, continuation in, and graduation from Political Science programs, the departmental GPA will be calculated over all successful attempts in the discipline.

For the purpose of calculating Class of Honours at graduation, only those courses needed to meet Political Science program requirements (exclusive of language requirement) will be included in the calculation of the departmental GPA.

## Honours Programs

The Honours programs may be entered in the First year, or by transfer from B.A. degree programs, if sufficient standing has been obtained. A B.A. (Honours) student may be approved for a B.A. degree at the end of the Third year if the requirements under that degree program have been completed. The following programs are available:

### B.A. (Honours) in Political Science

For full Honours, 20.0 credits will be required, including at least 9.0 credits in Political Science. The Political Science credits must comprise:

1. Political Science 47.100, 47.230, and 47.270;
2. 1.0 credit chosen from the following list of courses in Canadian government and politics: Political Science 47.200, 47.201, 47.300★, 47.301★, 47.302★, 47.303★, 47.304★, 47.305★, 47.306★, 47.307★, 47.335★, 47.336★, 47.340, 47.341★, 47.342★, 47.346★, 47.366★, 47.367★, 47.400, 47.401, 47.402★, 47.403★, 47.406★, 47.407★, 47.408★, 47.409★, 47.411★, 47.416★, 47.417★, 47.418★, 47.419★, 47.441★;
3. 1.0 credit chosen from the following list of courses in comparative politics and international relations: Political Science 47.215, 47.260, 47.309★, 47.310★, 47.311, 47.312★, 47.313★, 47.314, 47.315, 47.316★, 47.317★, 47.320, 47.322, 47.323, 47.326★, 47.327★, 47.328★, 47.329★, 47.332★, 47.344★, 47.345★, 47.350★, 47.351★, 47.352★, 47.360★, 47.361★, 47.362★, 47.363★, 47.365★, 47.366★, 47.373★, 47.405★, 47.412★, 47.413★, 47.414★, 47.415★, 47.420★, 47.421★, 47.422★, 47.423★, 47.440★, 47.450★, 47.455★, 47.460, 47.461★, 47.463★, 47.464★, 47.466★, 47.467★, 47.482★, 47.483★, 47.484★;
4. 3.0 additional credits in Political Science, of which the equivalent of at least 1.0 credit must be from the 400-level seminars and must be taken at Carleton University.
5. Candidates with Fourth-year Honours standing in Political Science and a GPA of 9.0 or better in Political Science courses are strongly encouraged to present an Honours essay on some topic involving independent investigation (Political Science 47.498); they may be examined orally on this essay and must receive a B- or better in this course. Political Science 47.498 must be taken at Carleton University. Any Honours student with a GPA below 9.0 in Political Science courses who wishes to present an Honours essay may do so with the agreement of a faculty supervisor and the permission of the Supervisor of Undergraduate Studies.

Students who do not write an Honours essay are required to complete 1.0 replacement credit in Political Science in the form of one or more 400-level seminars.

6. Language requirement: The Department requires Honours students to demonstrate proficiency in at least one language other than English, normally French. Honours students are required to demonstrate such proficiency, normally through the completion of any First-year course (or its approved equivalent) in a language offered at Carleton.

For students who consider that they already have proficiency in a second language, the Department conducts a French language examination once a year in November. For other languages, the

onus is on the student to provide suitable documentary evidence of proficiency to the Department.

## Combined B.A. (Honours)

Students intending to enter a program combining Political Science with another discipline should, in their First year, take Political Science 47.100 and the introductory course in the other discipline. For Combined Honours a minimum of 7.0 credits in Political Science will be required, including:

1. Political Science 47.100, 47.230, 47.270 or its equivalent; 2.0 credits chosen from the 400-level courses in Political Science;
2. The equivalent of 2.0 credits, chosen from requirements 2 and/or 3 listed for the full Honours program. The 2.0 credits may be chosen from one list; one of the 2.0 credits may be the 400-level seminar;
3. The language requirement as stated for Honours (item 6 above) in Political Science must be completed;
4. The requirements as stated for Combined Honours in the other discipline of the Combined program must be met.

## Combined Honours, Journalism and Political Science

Students admitted to Journalism prior to 1995-96, may select a course pattern that will lead either to the degree of B.A. with Combined Honours in Journalism and Political Science, in which case the Honours Essay will be written for the Department of Political Science, or to the degree of B.J. with Combined Honours in Political Science, in which case the Honours Essay will be written for the School of Journalism and Communication. Students in either program must complete 20.5 credits, and they must maintain a standing sufficiently high at all times to satisfy the standards of both the School of Journalism and Communication and the Department of Political Science. Students admitted to Journalism in 1995-96 or later must complete 20.0 credits. If they wish to graduate with a B.A. they must complete the Honours essay in Political Science; otherwise, the degree awarded will be the B.J. (Hons.). Please refer to the statement of standing on p. 302 (Journalism) and the regulations of the Faculty of Public Affairs and Management, p. 79.

Course requirements are:

1. A minimum of 7.0 credits in Political Science including: 47.100, 47.230, 47.270 or its equivalent, 2.0 credits chosen from requirements 2 and/or 3 listed for Honours in Political Science, 2.0 credits from the 400-level courses in Political Science.
2. For those students admitted to Journalism from 1995-96 on, the Journalism courses normally required under the Honours Journalism program, include Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421 and two of 28.425★, 28.426★, 28.427★, 28.428★. Students should consult the School of Journalism and Communication on course patterns. Students admitted to Journalism prior to 1995-96 should consult the School of Journalism and Communication for requirements.
3. The language requirement as stated for Honours in Political Science (item 6 above) must be completed.
4. An approved course in Canadian history. (Students who wish to practise journalism in another country may be advised to choose a different history course.)

## Combined Honours, Political Science and Economics

Students in this program are required to complete at least 6.0 credits in Political Science including Political Science 47.100, 47.230, and 47.270 and the equivalent of 2.0 credits from the 400-level seminars in Political Science.

Students must also meet requirements 2, 3 and 4 as stated for Combined Honours in Political Science.



## Combined Honours, Political Science and Sociology

Students in this program are required to complete 7.0 credits in Political Science including Political Science 47.100, 47.230, and the equivalent of 2.0 credits from the 400-level seminars in Political Science. In addition, the student must complete one of the following methodology sequences:

- (a) in the Second year, Political Science 47.270; in the Third year, Sociology, 53.370; or
- (b) in the Second year, Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended); in the Third year, Political Science 47.471 ★ and 47.472 ★. Students should note that Political Science 47.471 ★ and 47.472 ★ may not be offered every year.

Students must also meet requirements 2, 3 and 4 as stated for Combined Honours in Political Science.

**Note:** See also p. 413 and consult the Department of Sociology and Anthropology.

## Honours and Combined Honours Standing

Students must maintain a standing sufficiently high at all times to satisfy the requirements of the Faculty of Public Affairs and Management. (See p. 78.)

## B.A. Programs

A B.A. program in Political Science requires Political Science 47.100; one of 47.230 or 47.270; and 4.0 or more additional credits in Political Science.

First-year students intending to enter a B.A. or B.A. (Honours) program in Political Science should note that they may take a 200-level course concurrently with Political Science 47.100.

A Combined B.A. program, including Political Science, requires Political Science 47.100 and 3.0 or more additional credits in Political Science.

B.A. students should take a number of courses in related social sciences. Final-year B.A. students with the required standing may, with permission, be admitted to 400-level Honours courses, provided space is available. The entire program must be approved by the Department.

B.A. students must maintain a GPA of 4.0 in Political Science.

## Mention: français

Students who wish to qualify for the "Mention: français" notation in Political Science may do so by taking the following pattern of courses in their degree program:

1. 1.0 credit in the advanced study of the French language a minimum of French 01.108 or 20.160.
2. 1.0 credit in French-Canadian culture and heritage (two of French 20.267 ★, 20.268 ★, 20.281 ★ or 20.270).
3. One of Political Science 47.201 or 47.390. Political Science 47.201 is recommended.
4. Honours students are required to take Political Science 47.499 or one of 47.201 or 47.390, whichever was not used to meet requirement 3.

With the prior approval of the Department, students may substitute appropriate courses taught in French at the University of Ottawa for requirements 2 and 4.

## Carleton-Leeds Parliamentary Internship Exchange

The Carleton-Leeds Parliamentary Internship Exchange is a unique opportunity for Honours and Combined Honours students in their fourth year of Political Science to combine academic study with parliamentary internships in Canada and the United

Kingdom. Students participating in the exchange spend the Fall term in Ottawa and the Winter term in London. They spend four days a week in each city serving as parliamentary interns. In addition, they take courses offered by Carleton and Leeds Universities. More information and application forms are available from the Department of Political Science or from Carleton International.

## Graduate Program

The Department of Political Science offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the *Graduate Studies and Research Calendar*.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

### Prerequisites

Except in special circumstances, students are required to have taken the prerequisites listed in the Calendar. Appropriate experience and/or equivalent academic background may be substituted with the permission of the Department.

### First Year

First-Year Seminar in Political Science 01.131

#### Global Political Cultures

See course description on p. 86.

First-Year Seminar in Political Science 01.132

#### North American Politics

See course description on p. 86.

First-Year Seminar in Political Science 01.133

#### Social Impact of Transformation in the Post Communist Era

See course description on p. 86.

First-Year Seminar in Political Science 01.134

#### Politics of Race

See course description on p. 86.

First-Year Seminar in Political Science 01.135

#### Politics of Famine and Disease

See course description on p. 86.

Political Science 47.100

#### Introduction to Political Science

Contemporary political issues and problems: political thought, focusing upon the clash of modern ideologies; comparative government, starting from the Canadian system, and including one other western democracy, a post-communist system and a developing country; international politics; methods of enquiry.

Lectures three hours a week.

Political Science 47.111 ★

#### Global Political Cultures

The political role of culture in a global context. Investigates the integral role of architecture, art, landscape and film in legitimating, popularizing and propagating political endeavours. The imperialism of cultural exchanges between developed and developing countries.

Precludes additional credit for First-Year Seminar 01.131.

Lectures three hours a week.

Political Science 47.112 ★

#### North American Politics

A comparative examination of North American political institutions and continental economic integration. Special attention will be given to the political implications of economic integration.

Precludes additional credit for First-Year Seminar 01.132.

Lectures three hours a week.



Political Science 47.113★

**Social Impact of Transformation in the Post Communist Era**  
The political, economic and social changes that have accompanied the collapse of the Berlin Wall. Examines the role of the society in these political upheavals and the impact of the end of the Cold War on reform in Western and developing countries. Precludes additional credit for First-Year Seminar 01.102, 01.133 and East European Studies 55.113★.  
Lectures three hours a week.

Political Science 47.114★

**Politics of Race**

This course examines the meaning, sources and practice of racialism, as well as efforts to combat it, in a comparative context. Case studies will include South Africa, the United States, and Canada.  
Precludes additional credit for First-Year Seminar 01.134.  
Lectures three hours a week.

Political Science 47.115★

**Politics of Famine and Disease**

This course examines the political, economic, social and ecological dimensions of hunger, famine and disease around the world. Precludes additional credit for First-Year Seminar 01.135.  
Lectures three hours a week.

• **Second Year**

Political Science 47.200

**Canadian Politics**

Canadian political institutions, federalism, constitutional politics, and the major political, cultural, social and economic forces that animate Canadian politics.  
Prerequisite: Second-year standing.  
Lectures three hours a week.

Political Science 47.201

**Introduction à la politique canadienne**

Une vue générale du processus politique et des institutions politiques au Canada. Travaux peuvent être présentés en français ou en anglais.  
Precludes additional credit for Political Science 47.200.  
Prerequisite: Second-year standing.  
Lectures three hours a week.

Political Science 47.215

**Comparative Politics**

Concepts, theories and methods employed in the study of comparative politics, with particular emphasis on cross-national comparison of regimes and some of the major issues in the field.  
Prerequisite: Second-year standing.  
Lectures three hours a week.

Political Science 47.230

**History of Political Thought**

Western political thought from classical times to the nineteenth century: Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau and other thinkers.  
Precludes additional credit for Political Science 47.231.  
Prerequisite: Second-year standing.  
Lectures three hours a week.

Political Science 47.240

**Introduction to Public Administration and Public Policy**

The important concepts, institutions, and processes in the fields of public administration and public policy. Theoretical, empirical, and applied foundations of these fields will be considered.  
Precludes additional credit for Political Science 47.340.  
Prerequisite: Second-year standing.  
Lectures three hours a week.

Political Science 47.260

**International Relations**

Global politics and the international political economy. Topics include: war, terrorism, nuclear proliferation, the implications of a post-Cold War world, contemporary changes in the global political economy, and relations between rich and poor countries.

Prerequisite: Second-year standing.  
Lectures three hours a week.

Political Science 47.270

**Quantitative Political Science Research Methods**

Quantitative research methods used in political science. The logic and nature of the quantitative study of politics, research design, data collection methods, and statistical techniques for data analysis. Packaged computer programs used to analyze political and policy-related data.  
Prerequisite: Second-year standing.  
Lectures three hours a week.

• **Third Year**

Political Science 47.300★

**Canadian Provincial Politics**

A comparative examination of the nature of Canadian provincial politics. Topics include: political culture, history, party systems, electoral systems and voting behaviour.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.301★

**Canadian Intergovernmental Relations**

The main conceptual approaches to the structures and socio-economic processes of Canadian intergovernmental relations including selected policy fields in intergovernmental relations.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.302★

**Canadian Municipal Government**

The nature and problems of Canadian municipal government, including metropolitan and regional government and provincial-municipal relations.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.303★

**Canadian Urban Politics**

The nature and problems of Canadian urban politics.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.304★

**Political Parties and Elections in Canada**

The evolution of the party system, the growth of major and minor party movements and the electoral process in Canada.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.305★

**Ontario Government and Politics**

A survey of the political process and political institutions in Ontario.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.306★

**Social Power in Canadian Politics**

The role of social forces in the Canadian political process, including interest groups, social movements, elites and classes.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.307★

**Constitutional Politics in Canada**

The politics of the Canadian constitution. Particular attention to historical and contemporary constitutional reform.  
Prerequisite: Third-year standing.  
Lectures three hours a week.

Political Science 47.309★

**Politics of War in Africa**

The recurrent crises of war, and political instability in Africa, along with regional and international efforts to resolve them.  
Precludes additional credit for Political Science 47.310.



Prerequisite: Third-year standing.  
Lectures three hours a week.

**Political Science 47.310★**

**Politics of Development in Africa**

The historical background of African independence, and contemporary struggle for democracy and economic development in Africa.

Precludes additional credit for Political Science 47.310.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.311**

**Government and Politics of Latin America**

The evolution and functioning of Latin American political systems, including political development, state-society relations, regional integration, and North-South relations.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.312★**

**Politics of Development of China**

The evolving structures and processes of government in (greater) China with particular emphasis on politics in the People's Republic of China and secondary emphasis on Taiwan and Hong Kong.

Precludes additional credit for Political Science 47.312.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.313★**

**State, Society and Economy in Northeast Asia**

The relationship between government structures, society and the economy in Northeast Asia with particular emphasis on Japan and Korea.

Precludes additional credit for Political Science 47.312.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.314**

**Politics in Central and Eastern Europe**

A comparative examination of political institutions and processes in the states of Central and Eastern Europe.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.315**

**Government and Politics of South and South-East Asia**

The patterns of colonial history, emergent political regimes and problems of development and foreign policy in the countries from Pakistan through the Philippine Islands, with special emphasis on problems of political change.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.316★**

**Revolution**

Theories of revolution from Aristotle through the present era. Revolution as a concept, and as an empirical fact of central importance to our age.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.317★**

**The Causes of War**

Alternate theories of the causes of war. Such alternate perspectives as biological, social and comparative historical approaches, including the results of peace research activities of the past two decades.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.319★**

**The Politics of Law and Morality**

The politics of moral regulation using the experience of Canada, the United States and other jurisdictions. The treatment in law and public policy of such subjects as: capital punishment, sexual orientation, euthanasia, pornography, new reproductive technologies, racial discrimination, religious rights and equality rights.

Prerequisite: Third-year standing.  
Lectures three hours a week.

**Political Science 47.322**

**Government and Politics of the United States**

American political thought, constitutional development, and the governmental process.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.323**

**Government and Politics in the Middle East**

The evolution and functioning of political systems in the Middle East region, with emphasis on the problems of political stability, the impact of the West, the role of Islam, and war and peace.

Precludes additional credit for Political Science 47.362★.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.326★**

**The Government and Politics of Western Europe**

Changes in West European states and societies. Major institutions, structures and processes, with an emphasis on how European states are responding to social, political and economic changes.

Precludes additional credit for Political Science 47.321.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.327★**

**The Government and Politics of European Integration**

The processes of integration and disintegration in Western Europe; the European Union as an emerging political body that is shaping European politics. The evolution of European integration, and examination of the forces driving the move to an ever closer union.

Precludes additional credit for Political Science 47.321.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.328★**

**Reform and Political Change in the Russian Federation**

The ongoing process of post-Soviet reform in Russia: the implications of market reform; the process of democratization; and constitutional change in Russia's federal system. Historical perspectives from the Soviet experience, and comparative insights with the other Soviet successor states.

Precludes additional credit for Political Science 47.320.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.329★**

**Politics, Sovereignty and Identity in Russia and the Soviet Successor States**

Comparative statebuilding and social change in the successor states of former Soviet Union. The contentious processes of political institution-building, the emergence of new social identities, and the importance of ethnicity in the current politics of the region.

Precludes additional credit for Political Science 47.320.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.330★**

**Politics and Literature**

A study of imaginative prose in which political ideas and/or political settings dominate. Literature as political communication, the impact of literature upon politics, the peculiar value of literature in the study of politics, its shortcomings.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.331★**

**Politics and Psychoanalytic Thought**

The contribution of psychoanalytic thought to political and social theory. Emphasis on the origin and function of culture, instinct modification, perversion, character and political order; the psychoanalytic ethic and the therapeutic state; the Freudian-Marxist



dialectic and the critique of society.

Prerequisite: Political Science 47.230 or permission of the Department.

Lectures three hours a week.

Political Science 47.332★

**Asian Political Thought**

A comparative treatment of Asian political thought emphasizing the Chinese, Indian and Islamic perspectives.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.333

**Modern Political Thought and Ideologies**

An analysis of leading political concepts and ideologies since 1800, including utilitarianism, liberalism, conservatism, socialism and fascism.

Prerequisite: Political Science 47.230 or permission of the Department.

Lectures three hours a week.

Political Science 47.334

**Ancient and Medieval Political Thought**

The significance for political theory of the ancient and medieval controversies over nature/convention, power/knowledge, time/eternity, theory/practice, and science/mysticism. Thinkers such as Homer, the pre-Socratics, Plato and Aristotle, the neo-Platonists, Augustine, and the Scholastics.

Prerequisite: Political Science 47.230 or permission of the Department.

Lectures three hours a week.

Political Science 47.335★

**Canadian Political Ideas**

The sources and development of political ideas in French and English Canada.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.336★

**Canadian Political Culture**

The elements of Canadian political culture: individual beliefs, attitudes and values, the influence of the economy and environment, ideology, political socialization, and regional differences.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.341★

**Canadian Public Administration**

The Canadian bureaucracy as a major state actor in policy development. Selected issues and/or case studies in public sector management with particular attention paid to the process of policy identification through program development and implementation.

Precludes additional credit for Political Science 47.340.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.342★

**Canadian Public Policy**

Policy communities and policy networks in Canada with particular attention paid to policy issues, the political environment, policy instruments, impact and outcomes.

Precludes additional credit for Political Science 47.401.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.344★

**Comparative Public Administration**

Relations between the state bureaucracy or public organizations and civil society in various types of political and economic systems. Consideration of themes relevant to developed and developing countries.

Precludes additional credit for Political Science 47.440★.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.345★

**Comparative Public Policy Analysis**

The formation and impact of public policy: a variety of political systems as well as a variety of policy areas. Emphasis on developing skills for the analysis of policy formation and impact.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.346★

**Public Affairs and Media Strategies**

The public affairs and issue management strategies of corporations, government departments, and other institutions in Canada from a comparative perspective.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.350★

**Women in Politics: Liberal Democracies I**

The sex/gender dimension of political theory, culture, mass and elite participation, and public policy as manifested in selected liberal democracies, including Canada.

Precludes additional credit for Political Science 47.313★.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.351★

**Women in Politics: Liberal Democracies II**

A continued examination of the sex/gender dimension of political theory, culture, mass and elite participation, and public policy as manifested in selected liberal democracies, including Canada.

Precludes additional credit for Political Science 47.313★.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.352★

**Women in Politics: Third World**

The sex/gender dimensions of development theory and policy, political culture, mass and elite participation, and international agencies as manifested in selected Third World countries.

Precludes additional credit for Political Science 47.318★.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.360★

**International Institutions**

Origins, structure and functioning of international institutions with emphasis on the United Nations as well as regional organizations. Topics include peace and security, international aid and development, human rights and the control of global resources.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.361★

**Theories of International Politics**

Theoretical approaches to the study of international politics including an examination of the major concepts used for analysis and explanation in the field.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.363★

**Strategic Thought and International Security**

The evolution of U.S., Soviet/Russian, and Chinese approaches to strategy and those of other regional powers, as well as the application of strategic thought to selected issues in international security.

Prerequisite: Third-year standing.

Lectures three hours a week.

Political Science 47.365★

**Comparative Study of Foreign Policy**

The utility of comparative analysis in the study of the objectives, strategies and decision-making processes involved in the foreign policies of states.

Prerequisite: Third-year standing.

Lectures three hours a week.



**Political Science 47.366★****Canadian Foreign Policy**

The traditions, domestic influences, objectives, capabilities, and decision-making processes, and analysis of selected contemporary issues.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.367★****Canadian Defence Policy**

The evolution of Canadian defence policy in the twentieth century. The theory of Canadian defence policy and its operational aspects in a broad comparative context, related to themes such as strategic theory, military culture in a modern state, continentalism and military alliances.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.373★****Governing in the Global Economy**

The main approaches and policy issues in the political economy of advanced industrialised states. The relationship between state and market and the ways in which national states have responded to the pressures of governing in an increasingly interdependent global economy.

Prerequisite: Third-year standing.

Lectures three hours a week.

**Political Science 47.390****Études dirigées**

Un programme de lectures choisies et de travaux écrits dans le domaine de spécialisation d'un membre du département. Consulter le conseiller des études de premier cycle (Undergraduate supervisor) pour les sujets offerts.

Prerequisite: Third-year standing in the Political Science "Mention: français" program.

#### • Fourth Year: Honours and Graduate

These courses are normally reserved for Honours students in their Fourth year.

**Political Science 47.400****Topics in Canadian Government and Politics**

Section A: Political Economy of Canada. Selected issues in Canadian political economy including the role of the state in the Canadian economy, the political aspects of foreign ownership and economic structure and political change.

Section B: Canadian Political Institutions. Selected topics on institutions of Canadian Government at the federal level.

Section C: Canadian Political Behaviour. Voting, public opinion, political violence, socialization and other aspects of political behaviour in Canada. Religion, class and region as determinants of political cleavage.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.402★****Policy Seminar: Problems of Northern Development**

The issues, the policy processes and the problems of policy implementation in the political and economic development of Canada's northern territories.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.403★****Politics and the Media**

The role of the mass media in the Canadian political system from a comparative perspective.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.405★****Stability, Justice and Federalism**

Canada's unity crisis in a comparative perspective with particular attention to federalism, nationalism and regionalism.

Prerequisite: Additional credit for Political Science 47.405.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.406★****Legislative Process in Canada**

The role of Parliament and of the individual M.P. in terms of policy making, representation and the passage of legislation.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.407★****The Politics of Law Enforcement in Canada**

Major issues in the area of law enforcement policy, police administration and the criminal justice system in Canada. Particular emphasis on the role of law enforcement agencies as integral institutions of the Canadian political system.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.408★****National Security and Intelligence in the Modern State**

The state's response to foreign espionage, alleged subversion, terrorism, and counterintelligence. Major focus on the Canadian experience, but with extensive use of materials chronicling the practices of KGB, CIA, BIS, ASIO, MOSSAD, etc.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.409★****Quebec Politics**

Society, culture, economy and politics in Quebec. Special attention to the politically relevant changes since 1960 and the central place of Quebec within the Canadian federation.

Prerequisite: Fourth-year Honours standing and a reading knowledge of English or French.

Seminar three hours a week.

**Political Science 47.410★****Canadian and Comparative Local Government and Politics**

A comparative survey of the systems of local government in Canada, Britain and the United States. The emphasis on Canadian or comparative, and the problems chosen for study, vary with the interests of the students.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Political Science 47.411★****French-English Relations**

French-English relations in federal politics and in selected provinces, with emphasis on areas of conflict and methods of conflict management.

Prerequisite: Fourth-year Honours standing or permission of the Department. Reading knowledge of French.

Seminar three hours a week.

**Political Science 47.412★****Politics of Western Liberal Democracies**

The social structure and politics of advanced capitalist societies, including the historical and contemporary relationship between social classes — groupings, political parties and interest groups.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.



Political Science 47.413★

**The State in Advanced Capitalist Societies**

Comparative analysis of the structure and role of the state in capitalist societies. Topics may include state economic intervention, corporatism, welfare state activities and neo-conservatism.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.414★

**Theory and Practice in Third World Development**

The various theoretical approaches to the analysis of development and underdevelopment, of the historical experience of important models of development and of their application to selected countries in Asia, Africa and Latin America.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.415★

**Selected Problems in Third World Development**

The nature of international factors that influence Third World development such as multinational corporations, the new international division of labour, the new protectionism, the role of international debt, the politics of the Green Revolution, technology, and development assistance.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.416★

**Labour and the Canadian State**

A comparative examination of models of labour and the liberal democratic state, with particular attention to the role of the Canadian labour movement in the political process.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.417★

**Political Participation in Canada**

The causes and implications of political participation by individuals with special reference to Canada. Topics include citizen participation in campaign and party organizations, political protest movements, interest groups, and community associations.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.418★

**Canadian Provincial Government and Politics**

The political processes and institutions of the provinces.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.419★

**The Politics of the Canadian Charter of Rights and Freedoms**

The genesis and impact of the Charter of Rights and Freedoms. Particular emphasis on the politics of aboriginal, language, and equality rights.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.420★

**Policy Making in the United States**

Conflict and co-operation in the United States legislative and executive/bureaucratic arenas; overlapping struggles over policy initiative, innovation and planning. Emphases determined by student needs and interests.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.421★

**Politics of Influence in the United States**

Parties, interest groups, coalitions, movements and other significant influences upon who gets what, when, how in the United States. Elections, democratic accountability and political uses of mass media. Emphases determined by student needs and interests.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.422★

**Comparative Constitutional Politics**

The political character of leading western constitutions, with special emphasis on judicial politics and judicial policy-making in the United States; consideration also given to developments in Canada, Britain and France.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.423★

**Southern Africa in the Post-Apartheid Era**

The pathology of apartheid, the reasons for its end, and prospects for democratization and development in southern Africa in the era of globalization. Also offered at the graduate level, with additional or different requirements, as Political Science 47.523, for which additional credit is precluded.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.424★

**Elections**

The conduct and meaning of elections in contemporary states. Attention to the connection of elections to concepts of representation, policy mandates, and political parties, and to electoral systems and referendums.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.425★

**Identity Politics**

The strategies and ideologies of social movements in the Canadian political process, such as the women's movement and the environmental movement.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.426★

**Indigenous Politics of North America**

Issues of governance regarding the original peoples of Canada, Mexico and the United States since the European invasion. Contemporary movements for restoration of their cultural, political, socio-economic, land and self-governance rights, emphasizing both domestic and international strategies. Also offered at the graduate level, with additional or different requirements, as Political Science 47.510, for which additional credit is precluded.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.427★

**Globalization, Adjustment and Democracy in Africa**

This course will explore the nature of global pressures in Africa, as states go through a 'second wind' of political and economic change. Also offered at the graduate level, with additional or different requirements, as Political Science 47.517, for which additional credit is precluded.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.



Political Science 47.431★

### **Marxist Thought**

An examination of Marxism with special emphasis on Marx and Engels, including writings from all periods of their work.

Prerequisite: Political Science 47.230 or permission of the Department.

Seminar three hours a week.

Political Science 47.432★

### **Contemporary Marxism**

An examination of all relevant interpretations of Marx's theory including evolutionary socialism, Leninism, Trotskyism, Stalinism, Maoism and the main schools of contemporary revisionism.

Prerequisite: Political Science 47.431★.

Seminar three hours a week.

Political Science 47.434

### **Political Inquiry**

Competing theoretical methods of inquiry in the discipline — positivism, functionalism, phenomenology, structuralism, and post-structuralism — with particular attention to the claims made for scientific truth. Weber, Polanyi, Feyerabend, Kuhn, Habermas, Foucault, Rorty and others.

Prerequisite: Political Science 47.230 or permission of the Department.

Seminar three hours a week.

Political Science 47.435

### **Contemporary Political Theory**

Recent work in political theory, stressing major approaches to the understanding of contemporary political life. Approaches such as historicism, the sociology of knowledge, positivism, phenomenology, critical theory, existentialism, neo-classicism. Works by such thinkers as Gramsci, Mannheim, Popper, Strauss, Cassirer, Habermas, Sartre, and Voegelin.

Prerequisite: Political Science 47.230 or permission of the Department.

Seminar three hours a week.

Political Science 47.436★

### **Concepts of Political Community I**

Concepts of political community, including the common good, justice, citizenship, statesmanship, democracy and legitimacy from ancient, modern and contemporary political theory. Also offered at the graduate level, with additional or different requirements, as Political Science 47.538, for which additional credit is precluded.

Precludes additional credit for Political Science 47.430★.

Prerequisite: Political Science 47.230 or permission of the Department.

Seminar three hours a week.

Political Science 47.437★

### **Concepts of Political Community II**

A continued critical survey of concepts of political community, including the common good, justice, citizenship, statesmanship, democracy and legitimacy from ancient, modern and contemporary political theory. Also offered at the graduate level, with additional or different requirements, as Political Science 47.539, for which additional credit is precluded.

Precludes additional credit for Political Science 47.430★.

Prerequisite: Political Science 47.436★ or permission of the Department.

Seminar three hours a week.

Political Science 47.441★

### **Business-Government Relations in Canada**

The theory and practice of business-government relations in Canada. Primary focus on the role of the private sector firm in the Canadian political system and policy process. Case studies addressing issues and problems in the relations of business to government.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.446★

### **Theories of Public Administration**

Theories of bureaucracy, organization and comparison. Also offered at the graduate level, with additional or different requirements, as Political Science 47.646, for which additional credit is precluded.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.447★

### **Public Policy: Content and Creation**

The content and creation of public policy. Focus on the explanation, prediction and design of policy. Perspectives and examples are drawn from a variety of frameworks and from both Canadian and non-Canadian contexts. Also offered at the graduate level, with additional or different requirements, as Political Science 47.647, for which additional credit is precluded.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.448

### **Public Organizations: Theory and Practice**

The major schools of organizational theory and behaviour as approaches for understanding the nature of public organizations.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.450★

### **Feminist Political Analysis in Comparative Perspective**

The gendered nature of authority, feminist reconceptions of representation and interests, the relationships between sex/gender regimes and state forms, and the strategic treatments of identity politics, race and class difference and nationalisms by various women's movements.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.455★

### **Transitions to Democracy**

A comparative analysis of processes of democratization. Diverse theoretical approaches to understanding the timing, causes, nature, and limitations of democratization. Examples drawn from Europe and Russia, Latin America, Africa, and Asia.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.460

### **Analysis of International Politics**

Principal issues in international relations; theory building, evaluation of concepts, research design, philosophy of science criteria and policy relevance in ongoing research in international relations theory.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.461★

### **Foreign Policies of Soviet Successor States**

The foreign policies of the USSR, and of Russia and selected other successor states, with special emphasis on the search for a new security order.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.463★

### **Analysis of International Political Economy**

Various theoretical approaches to the study of the international political economy, with a focus on historical development and changing international structures.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.



Political Science 47.464★

**Selected Problems in International Political Economy**

Contemporary problems and issues in the international political economy, with particular attention given to advanced industrial countries.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.466★

**American Foreign Policy**

The sources, trends and conflicting interpretations of the international roles of the United States since World War II. Foreign policy machinery and processes assessed in terms of the relative importance of perceptions, ideology, self-interest, and domestic and foreign pressures.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.467★

**International Politics of North America**

Continentalism within Canadian foreign policy during the twentieth century in relation to Britain and the United States. Also offered at the graduate level, with additional or different requirements, as Political Science 47.567, for which additional credit is precluded.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.471★

**Intermediate Polimetrics for Micro Data**

Research designs and statistical techniques primarily used in analyzing survey data. Selected topics may vary from year to year. Students doing Honours papers based on micro data are advised to take this course. Also offered at the graduate level, with additional or different requirements, as Political Science 47.571, for which additional credit is precluded.

Prerequisite: Political Science 47.270 or permission of the Department.

Seminar three hours a week.

Political Science 47.472★

**Intermediate Polimetrics for Macro Data**

Research designs and statistical techniques primarily used in analyzing macro or aggregate data. Selected topics may vary from year to year. Students doing Honours papers based on macro data are advised to take this course. Also offered at the graduate level, with additional or different requirements, as Political Science 47.572, for which additional credit is precluded.

Prerequisite: Political Science 47.270 or permission of the Department.

Seminar three hours a week.

Political Science 47.482★

**International Politics of Africa**

Focus on a particular theme related to the interactions of African states within the African subsystem and with other sectors in the international system.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.483★

**Foreign Policies of Major East Asian Powers**

The foreign policies of the East Asian powers, with special attention to China and Japan; an analysis of the domestic sources of policy, capabilities, interests, decision-making processes and foreign relations.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.484★

**International Relations of South and Southeast Asia**

Foreign policy orientations of the regional actors and interaction with non-regional actors. Special emphasis on enduring sources

of conflict within the area, and emerging patterns of co-operation, including comparison of ASEAN with SAARC.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Political Science 47.490

**Tutorial in a Selected Field**

Tutorials or reading courses on selected topics in which seminars are not available arranged.

Prerequisite: Permission of the Department and agreement of an instructor.

Tutorial hours arranged.

Political Science 47.491★

**Tutorial in a Selected Field**

Tutorials or reading courses on selected topics in which seminars are not available arranged.

Prerequisite: Permission of the Department and agreement of an instructor.

Tutorial hours arranged.

Political Science 47.492★

**Tutorial in a Selected Field**

Tutorials or reading courses on selected topics in which seminars are not available arranged.

Prerequisite: Permission of the Department and agreement of an instructor.

Tutorial hours arranged.

Political Science 47.493★

**British Parliamentary Politics**

Parliament and the legislative process. Offered in London, U.K., by faculty members of Leeds University but governed by Carleton regulations and co-ordinated by Carleton's Department of Political Science.

Prerequisite: Selection to the Carleton-Leeds Parliamentary Internship Exchange.

Seminar three and one-half hours a week.

Political Science 47.494

**Carleton-Leeds Parliamentary Internships (3.0 credits)**

Parliamentary internships in Ottawa (Fall term) and London, U.K. (Winter term). The academic requirements are met through an essay and an oral examination. Graded *Sat* or *Uns*.

Prerequisite: Selection to the Carleton-Leeds Parliamentary Internship Exchange.

Internship four days a week.

Political Science 47.498

**Honours Graduation Essay**

The Honours essay is supervised under the direction of a faculty member who is either selected by the candidate or assigned early in the year. The Honours essay is evaluated by both the supervisor and an appointed reader. Students intending to proceed to post-graduate studies are strongly encouraged to complete an Honours essay.

Prerequisite: Fourth-year Honours standing in Political Science with a Political Science GPA or 9.0 or better\*, or permission of the Supervisor of Undergraduate Studies.

Tutorial hours arranged.

Political Science 47.499

**Mémoire de recherche**

Un travail de recherche dans le domaine de spécialisation d'un membre du département. Consulter le conseiller des études de premier cycle (Undergraduate supervisor) pour les sujets offerts.

Prerequisite: Fourth-year standing in the Political Science "Mention: français" program.\*

\* Students should refer to regulations of the Faculty of Public Affairs and Management regarding submission of Honours Essays (see p. 79) and to the Department of Political Science course requirements for the Honours Essay, which may be obtained from the Departmental Office.

## Graduate Courses

Fourth-year Honours students may, with permission of the Department, be admitted to the following 500-level Political Science seminars, which are more fully described in the *Graduate Studies and Research Calendar*:

### Political Science

- 47.503★ Political Parties in Canada
- 47.506★ Politics in Canadian Government and Politics
- 47.507★ Topics in Canadian Politics and Government in Comparative Perspective
- 47.508★ The Politics of Energy and the Environment
- 47.509★ Canadian Political Economy
- 47.511★ Canadian Federalism
- 47.514★ The Transition from Communism
- 47.515★ Post-Communist Politics in East Central Europe
- 47.516★ Selected Problems in the Politics of Soviet Successor States
- 47.517★ Globalization, Adjustment and Democracy in Africa
- 47.518★ State, Revolution, and Reform
- 47.519★ Comparative Public Policy
- 47.520★ Nationalism
- 47.521★ Politics in Plural Societies
- 47.522★ Politics of Third World Development
- 47.525★ Problems in American Government I
- 47.526★ Problems in American Government II
- 47.531★ Modern Political Culture and Ideology
- 47.532★ Democratic Theories
- 47.536★ North American Political Traditions
- 47.537★ Political Thought in North America

- 47.541★ Canadian Public Administration and Policy Analysis
- 47.544★ Public Administration in Developed Western Countries
- 47.545★ Public Administration in Developing Countries
- 47.549★ Research Seminar in Public Administration
- 47.551★ Selected Issues in Political Economy I
- 47.552★ Selected Issues in Political Economy II
- 47.553★ Topics in West European Politics I
- 47.554★ Topics in West European Politics II
- 47.555★ Topics in Comparative Politics I
- 47.556★ Sex/Gender and Politics
- 47.561★ Analysis of Canadian Foreign Policy
- 47.573★ Advanced Research Methods
- 47.581★ Foreign Policies of African States
- 47.585★ Foreign Policy Analysis
- 47.586★ Strategic Thought and Issues in International Security
- 47.587★ Analysis of International Organizations
- 47.588★ International Political Economy
- 47.589★ Problems in International Politics

### Related Courses

Subject to *prior* approval by the department, a student in the B.A. (Honours) or B.A. program may use one course in a related discipline as a political science credit. This permission will be granted only if the content of the transfer course is very closely related to political science and if the department of political science does not itself offer a comparable course. Students in the combined B.A. (Honours) or B.A. programs may not use related courses as political science credits.



# Psychology

## (Arts and Social Sciences/Science)

B550 Loeb Building  
Telephone: 520-2644

### Academic Administration

Chair, K. Matheson

Chair, Graduate Committee, J. LeFevre

Chair, Undergraduate Committee, J. Logan

Chair, Ethics Committee, M. Gick

### Teaching Staff

#### Professors

**Donald A. Andrews**, B.A., M.A. (Carleton), Ph.D. (Queen's), C.Psych. • **Hymie Anisman**, B.A. (Sir George Williams), M.A. (Memorial), Ph.D. (Waterloo) • **R.F. Dillon**, A.B. (Dartmouth) M.S. (Florida), Ph.D. (Virginia) • **P.A. Fried**, B.Sc. (McGill), M.A., Ph.D. (Waterloo) • **Robert D. Hoge**, B.A. (Kenyon), M.A., Ph.D. (Delaware) • **William D. Jones**, B.A., Ph.D. (Sheffield) • **J.B. Kelly**, B.A. (Southwestern at Memphis), Ph.D. (Vanderbilt) • **Jo-Anne LeFevre**, B.Sc., M.Sc., Ph.D. (Alberta) • **Brian R. Little**, B.A. (Victoria), Ph.D. (California at Berkeley) • **Dan C. McIntyre**, B.S. (Carroll College, Wisconsin), M.A. (Northern Illinois), Ph.D. (Waterloo) • **Bruce A. Pappas**, B.A., M.A., Ph.D. (Queen's) • **William M. Petrusic**, B.A. (British Columbia), M.A., Ph.D. (Michigan) • **David C.S. Roberts**, B.Sc. (Victoria), M.Sc., Ph.D. (British Columbia) • **Warren B. Thorngate**, B.A. (California), M.A., Ph.D. (British Columbia) • **T.N. Tombaugh**, B.A. (DePauw), M.A., Ph.D. (Missouri), C. Psych. • **Jo Wood**, B.A. (DePauw), M.A., Ph.D. (Missouri) • **Robert M. Zacharko**, B.Sc. (Montréal), M.Sc., Ph.D. (Saskatchewan)

#### Associate Professors

**Frances Cherry**, B.A., M.A. (York), Ph.D. (Purdue) • **A. Forth**, B.A., M.A., Ph.D. (British Columbia) • **Mary L. Gick**, B.Sc. (McGill), Ph.D. (Michigan) • **Chris M. Herdman**, B.Sc. (Trent), M.Sc., Ph.D. (Alberta) • **Connie M. Kristiansen**, B.Sc. (Toronto), M.Sc. (London School of Economics), Ph.D. (Exeter) • **John Logan**, B.Sc. (Dalhousie), Ph.D. (Indiana) • **K. Matheson**, B.A., M.A. (Carleton), Ph.D. (Waterloo) • **Lise Paquet**, B.A., M.A. (Moncton), Ph.D. (Waterloo) • **Shelley E. Parlow**, B.Sc. (Victoria), M.A., Ph.D. (Toronto) • **Monique Sénechal**, B.Ps., M.A. (Moncton), Ph.D. (Alberta) • **Brian W. Tansley**, B.A., M.A. (British Columbia), M.A., Ph.D. (Rochester), C.Psych. • **Roger B. Wells**, B.A. (Reed), M.A., Ph.D. (North Carolina), C.Psych. • **S.H. Wu**, M.D. (Shanghai Medical)

#### Assistant Professors

**Robert J. Coplan**, B.Sc. (McGill), M.A., Ph.D. (Waterloo) • **Tina Daniels**, B.A. (Queen's), M.A.Sc., Ph.D. (Waterloo) • **Timothy A. Pynchyl**, B.Sc. (McMaster), B.Ed. (Ottawa), M.A., Ph.D. (Carleton)

#### Adjunct Research Professors

**P.R. Ballantine**, BNR • **D.J. Baxter**, Queen's University • **J. Bonta**, Solicitor General of Canada • **S. Borys** • **R. Broughton**, Ottawa General Hospital • **R. Brown**, Department of Psychology, Dalhousie University • **K. Busby** • **M. Cappelli**, Children's Hospital of Eastern Ontario • **E.J. Casson**, University of Ottawa Eye Institute • **A. Croll** • **J. D'Eon**, Regional Rehabilitation Centre • **B. Evans**, Canadian Heritage • **M.B. Ferlan**, Department of Psychology, Saint-Vincent Pavilion • **R.L. Franche**, Ottawa General Hospital • **B.A. Grant** • **R.K. Hansen**, Solicitor General of Canada • **D. Harper**, Saint Vincent Hospital • **B. Hu**, Ottawa Civic Hospital • **V. Knott**, Royal Ottawa Hospital • **S.M. Kuehn** • **W. Loza**, Kingston Penitentiary • **I. Manion** • **S.F. Mikall**, Regional Rehabilitation Centre • **E. Mohr**, Elisabeth Bruyere Hospital • **J. Olds**, Children's Hospital of Eastern Ontario • **R.T. Plvik**, University of Ottawa • **A.V. Ravindran**, Royal Ottawa Hospital • **L.P. Renaud**, Ottawa Civic Hospital • **K.E. Renner**, Carleton University • **D. Robinson**, Correctional Services Canada • **I. Shields**, Correctional Services Canada • **L. Stelmach**, Communications Research Centre • **A. Tellier**, Ottawa General Hospital • **J. Veitch**, National Research Council Canada • **J. Weekes**, Correctional Services Canada • **T. Whalen**, Communications Research Centre • **J.S. Wormith**, Solicitor General Ontario

#### Adjunct Professors

**D.K. Bernhardt** • **J. Partington**

### Study in Psychology

The Department of Psychology offers two programs in the Faculty of Arts and Social Sciences. One leads to a B.A. (Honours) degree in Psychology; the other leads to a B.A. degree in Psychology. In the Faculty of Science, the Department offers a program leading to a Bachelor of Science (B.Sc.) degree with Honours in Psychology and a B.Sc. with Honours in Neuroscience.

With certain restrictions, these degree programs may be combined with programs in other departments. In addition, the B.A. with Honours and B.A. programs in Psychology may be undertaken with concentration in Criminology and Criminal Justice. (See p. 211.)

To be eligible to enter, to continue and to graduate from these degree programs, students must fulfil all the University regulations (see p. 49) and all appropriate Faculty regulations (see p. 72 for



the Faculty of Arts and Social Sciences and p. 117 for the Faculty of Science). In addition students must meet the requirements of the Department of Psychology, as described below.

### Course Organization in Psychology

Study in Psychology begins with Introductory Psychology (Psychology 49.100), which is a prerequisite for all other courses offered by the Department. At the 200-level, the Department offers core courses, which are frequently prerequisites for higher level courses. Some combination of these core courses is required in each of the programs of study offered by the Department of Psychology.

Included among the 200-level courses is Psychology 49.200, Introduction to Psychological Research and Statistics, which must be completed by all students enrolled in a Departmental program.

The 200-level courses lead to branching courses, which offer still further specialization in the subject matter of psychology. These and other advanced courses are numbered at the 300- and 400-level. The upper-level courses in psychology are loosely clustered into speciality areas, which may be used to focus study within degree programs. The speciality areas are identified by the next-to-last digit of the course number: Social Psychology (49.x1x), Neuroscience (49.x2x), History (49.x3x), Community (49.x4x), Developmental (49.x5x), Personality (49.x6x), Learning and Cognition (49.x7x), Testing and Assessment (49.x8x).

### Courses Outside the Department of Psychology

Credits for the degree that are not specified by the Department of Psychology may be taken in any discipline, subject to the Faculty of Arts and Social Sciences regulations beginning on p. 78. Unspecified credits may also be taken in Psychology so long as the maximum number of Psychology credits permitted for the degree is not exceeded.

Students are strongly urged to discuss the suitability of their course selections with the Undergraduate Office of the Department of Psychology.

### Calculation of the Psychology GPA

The GPA in Psychology is based on all credits in psychology successfully completed, graded and counted in the degree program for which the student is registered. All such psychology credits to the maximum number permitted in the student's degree program are used in the calculation. Both the minimum number of required credits and the maximum number of psychology credits permitted in a Psychology degree program are given in the program description that follow. Psychology credits beyond the maximum number permitted in a Psychology degree program are not included in the calculation of the GPA and are excluded from the total number of credits counted toward the degree.

The minimum GPA in Psychology required to enter, continue and to graduate in a Psychology degree program are those stated in the Faculty regulations. (See p. 78.)

### Mention: français

Students other than those in the B.Sc. with Honours in Biology and Psychology degree program who wish to qualify for the "Mention: français" notation in Psychology may do so. To qualify, students must undergo placement testing by the Department of French in order to satisfy the language requirement and to protect the integrity of the initiative.

To graduate with the notation "Mention: français" students must include in their program the following:

#### Year 1

1.0 credit in the advanced study of the French language. This credit will fulfill Requirement 2 in Year 1 of the B.A. with Honours

and B.A. programs and Requirement 4 in the B.Sc. with Honours in Psychology program.

#### Years 2 and 3

1.0 credit devoted to the history and culture of French Canada at the 200- or 300-level or 1.0 credit at the 200- or 300-level offered entirely in French and approved by the Department of Psychology. This credit will fulfil Requirement 4 in Year 2 of the B.A. degree program and Requirements 5 in Year 2 of both the B.A. and B.Sc. with Honours degree programs.

1.0 credit at the 200- or 300-level in Psychology taken entirely in French to satisfy one of the elective requirements in the relevant Psychology degree program. This credit must be approved by the Department of Psychology and must be taken at the University of Ottawa under the Exchange Agreement or at a francophone institution on a Letter of Permission obtained from the Registrarial Services office.

#### Year 4 (Honours)

1.0 credit at the 400-level in Psychology taken entirely in French at Carleton University. Normally this will be one of Psychology 49.497, 49.498, 49.499 or 49.490★ and 49.492★.

To obtain the notation, students in a B.A. degree program with combined majors must fulfil the requirements for Mention français of both Departments. The Mention français option is not available in combined degree programs in which the other Department does not offer the notation.

### B.A. Programs in Psychology

#### B.A. (Honours) Program

The B.A. with Honours program requires 20.0 credits, with a minimum of 9.0 and a maximum of 12.0 of these taken in Psychology. This program normally takes four years to complete, but may take longer.

In the Third year either a thesis or an essay option becomes available in the B.A. with Honours in Psychology degree program. The thesis option provides increased training in both research methodology and writing and is intended primarily for students who plan post-graduate study and/or a career in research. The essay option offers training in writing and develops skills in literature review and is intended primarily for students who want to obtain this preparation and to take advantage of other opportunities that an Honours degree in Psychology can provide.

The thesis option requires an Honours seminar, which is normally taken in Third year and is usually followed in Fourth year by Psychology 49.498, Thesis for B.A. with Honours in Psychology. The Department of Psychology offers seven Honours seminars (Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370 and 49.380). Each is scheduled for six hours a week. To enter an Honours seminar a student must have a GPA of 8.0 or better in all graded Psychology courses taken at Carleton. The prerequisites for the thesis course, Psychology 49.498, include a required minimum GPA in all graded Psychology courses taken at Carleton of 9.0.

The essay option requires either an Honours seminar or both Psychology 49.301★ and 0.5 elective credit in Psychology above the 200-level. Psychology 49.499, Essay for B.A. with Honours in Psychology, is normally taken in the Fourth year. The minimum required GPA for the Honours seminar is 8.0 in all graded Psychology courses taken at Carleton. Otherwise, the minimum required GPA required to enter Third year is 6.0 in all graded Psychology courses taken at Carleton. The minimum GPA required to enter Fourth year is 6.5 in all graded Psychology courses taken at Carleton. A requirement of both options is Psychology 49.300, Design and Analysis in Psychological Research (or an acceptable alternate). Students in an approved program which combines study in Psychology and another discipline may take approved alternate courses for Psychology 49.300, 49.498 or 49.499.



Students in part-time study should note that the times when Honours courses are offered may require enrolment during the Day division.

To enter the B.A. with Honours program in Psychology, a student must make application at the Registrarial Services office of the Faculty of Arts and Social Sciences. Normally this is done before the start of the Second program year. The periods during the academic year when application may be made are announced by the Registrarial Services office. At the time of application a student should also consult the Undergraduate office about specific program requirements. Students who apply to change a program after the start of the Second program year may have difficulty in completing the program in the usual time period.

Failure to maintain the minimum required GPA will result in a student being required to withdraw from the Honours program in Psychology. In addition, to enter and to continue in the B.A. with Honours program, a student must meet the relevant Faculty of Arts and Social Sciences regulations. (See p. 78.)

Graduation from the B.A. with Honours program in Psychology requires a GPA of 6.5 or better over all graded Psychology courses counted towards the degree.

A student in the B.A. with Honours program may apply to transfer to the B.A. program at the times specified by the Registrarial Services office and may be graduated with a B.A. degree provided that the requirements for that degree have been satisfied.

The Department's requirements for the degree are summarized in the following list:

1. Psychology 49.100
2. Psychology 49.200
3. 1.0 credit from Psychology 49.220★, 49.250★ and 49.270★
4. 1.0 credit from Psychology 49.210★, 49.230★ and 49.260★
5. Psychology 49.300
6. One of Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370, 49.380 or both Psychology 49.301★ and 0.5 credit in Psychology above the 200-level.
7. 1.0 elective credit in Psychology at 300-level or higher
8. 1.0 elective credit in Psychology
9. Psychology 49.498 or 49.499
10. 2.0 credits from Biology, Chemistry, Computer Science, Geology, Mathematics and Physics
11. 1.0 credit from a discipline in the Faculty of Arts
12. 1.0 credit from a discipline other than Psychology in the Faculty of Arts and Social Sciences
13. 3.0 optional credits above 100-level, not in Psychology
14. 1.0 optional credit, not in Psychology
15. 3.0 optional credits

In this program, the maximum number of Psychology credits permitted is 12.0.

### **B.A. with Combined Honours in Psychology and Another Discipline**

When application is made to enter an Honours program in Psychology and another discipline, the student must declare one or the other as the discipline of primary study. This declaration is determined by the order in which the two disciplines are listed on the application. The other discipline must be selected from the Faculty of Public Affairs and Management or the Faculty of Arts and Social Sciences.

Application to enter a combined B.A. with Honours program must be made at the Registrarial Services office appropriate to the discipline of primary study. Normally application is made before the start of the Second program year. The periods during the academic year when application may be made are announced by the Registrarial Services office. Students who apply to change a pro-

gram after the start of the Second program year may have difficulty in completing the program in the usual time period.

The Department's requirements for the B.A. degree with Honours in Psychology are modified when study is combined with another discipline. The Undergraduate office of the Department of Psychology should be consulted for advice in the selection of courses.

When Psychology is the discipline of primary study, Psychology 49.200, 49.300 and Psychology 49.498 or 49.499 are normally taken to meet Requirements 2, 5, and 9. When the other discipline is the one for primary study Requirements 2 and 5 may be met with approved alternatives in the other discipline, if available. Thus Psychology 49.200 (Requirement 2) may be replaced with Anthropology 54.203, Mass Communication 27.201, Political Science 47.270 or Sociology 53.203. Psychology 49.300 (Requirement 5) may be replaced with Economics 43.220, both Mass Communication 27.400★ and 27.402★ or Sociology 53.370.

The Honours thesis or essay (Requirement 9) must be completed in the discipline of primary study. If an Honours thesis or essay is not available in the other discipline, either Psychology 49.498 or 49.499 must be taken.

Acceptable alternatives to Psychology 49.498 and 49.499 in combined programs include Anthropology 54.495, Art History 11.499, Biology 61.497, Biology 61.498, Economics 43.498, English 18.498, Film Studies 19.495, Geography 45.491★ and 45.492★, Geography 45.499, German 22.499, History 24.499, Journalism 28.498, Law 51.498, Mass Communication 27.497, Music 30.498, Political Science 47.495, Religion 34.499, Russian 36.499, Sociology 53.495, East European Studies 55.498, Women's Studies 09.498.

Requirements 7 and 8 are waived.

A minimum of 7.0 credits in Psychology must be taken in the B.A. with Honours program in Psychology and another discipline. Additional credits in Psychology must be taken to replace those credits for which approved alternatives for 49.200, 49.300, 49.498 or 49.499 are taken. The maximum number of Psychology credits allowed in any B.A. with Honours program is 12.0.

Credit can not be obtained in a Psychology degree program for both a Psychology credit and an alternative credit in another discipline. Approved alternative credits are not used in the calculation of the GPA in Psychology.

### **B.A. Program**

The B.A. program is intended for those students who want to have Psychology as their required area of study. The B.A. (3 year) degree requires a total of 15.0 credits and normally takes three years of study. A minimum of 6.0 and a maximum of 7.0 of the credits must be in Psychology.

To enter the B.A. program in Psychology, a student must make application at the Registrarial Services office of the Faculty of Arts and Social Sciences. Normally this is done before the start of the Second program year. The periods during the academic year when application may be made are announced by the Faculty Registrarial Services office. At the time of application a student should also consult the Undergraduate office about specific program requirements. Students who apply to change a program after the start of the Second program year may have difficulty in completing the program in the usual time period.

The requirements for the degree may be met in part-time study.

Entry to and continuation in the B.A. program in Psychology as well as graduation with the B.A. degree require that the student maintain a GPA of at least 4.0 over all Psychology courses taken at Carleton University.

The student must meet all the relevant University and Faculty of Arts and Social Sciences regulations. The University regulations begin on p. 48, and those of the Faculty of Arts and Social Sciences on p. 71.

The Department's requirements for the degree are summarized in the following list:

1. Psychology 49.100



**2. Psychology 49.200**

- 3.** 1.0 credits from Psychology 49.220★, 49.250★ and 49.270★
- 4.** 1.0 credits from Psychology 49.210★, 49.230★ and 49.260★
- 5.** 1.0 elective credit in Psychology at 300-level or higher
- 6.** 1.0 elective credit in Psychology
- 7.** 1.0 credit from a discipline in the Faculty of Arts
- 8.** 1.0 credit from a discipline other than Psychology in the Faculty of Arts and Social Sciences
- 9.** 3.0 optional credits above 100-level, not in Psychology
- 10.** 3.0 optional credits, not in Psychology
- 11.** 1.0 optional credit

In this program the maximum number of Psychology credits permitted is 7.0.

**B.A. in Psychology and Another Discipline**

When application is made to enter a B.A. program in Psychology and another discipline, the student must declare one or the other as the discipline of primary study. This declaration is determined by the order in which the two disciplines are listed on the application. The other discipline must be selected from the Faculty of Arts and Social Sciences or the Faculty of Arts.

Application to enter a combined B.A. program must be made at the Registrarial Services office appropriate to the discipline of primary study. Normally application is made before the start of the Second program year. The periods during the academic year when application may be made are announced by the Registrarial Services office. Students who apply to change a program after the start of the Second program year may have difficulty in completing the program in the usual time period.

The Department's requirements for the B.A. degree in Psychology are modified when study is combined with another discipline. The Undergraduate office of the Department of Psychology should be consulted for advice in the selection of courses.

When Psychology is the discipline of primary study, Psychology 49.200 is normally taken to meet Requirement 2. When the other discipline is the one for primary study Requirement 2 may be met with an approved alternative in the other discipline, if available. Thus Psychology 49.200 (Requirement 2) may be replaced with Anthropology 54.203, Mass Communication 27.201, Political Science 47.270 or Sociology 53.203.

Requirement 6 is waived.

A minimum of 5.0 credits in Psychology must be taken in a B.A. program in Psychology and another discipline. 1.0 additional credit in Psychology must be taken to replace an alternative credit taken for 49.200 (Requirement 2). The maximum number of credits in Psychology that can be counted towards the B.A. degree is 7.0.

Credit can not be obtained in a Psychology degree program for both a Psychology credit and an alternative credit in another discipline. Approved alternative credits are not used in the calculation of the GPA in Psychology.

**B.Sc. Programs in Psychology****B.Sc. (Honours) Program****First Year**

- 1.** Psychology 49.100 as Social Science Elective.
- 2.** Mathematics 69.107★ and 69.117★.
- 3.** 2.0 credits from Biology 61.103★ and 61.104★, Chemistry 65.100, Geography 45.105 or Geology 67.100 or 67.105, Physics 75.101★ and 75.102★ or 75.105.
- 4.** 1.0 additional credit from Science, Social Sciences or Arts.

**Second Year**

- 1.** Psychology 49.200.
- 2.** 1.0 credit from Psychology 49.220★, 49.250★ and 49.270★.
- 3.** Mathematics 69.257★ and 69.259★ or 69.217★ and 69.257★. (Psychology 49.300 may be substituted in Third year, in which case the student must offer 1.0 credit above first-year level in Biology, Mathematics, Chemistry or Physics chosen with approval of the Department of Psychology).
- 4.** 1.0 credit from Arts and Social Sciences other than Psychology.
- 5.** 1.0 optional credit.

**Third Year**

(See Requirement 3, Second year)

- 1.** One of Psychology 49.320, 49.350, 49.370, or 49.380.
  - 2.** One of Psychology 49.220★, 49.250★, or 49.270★, not previously taken and 49.230★.
  - 3.** 1.0 elective credit in Psychology.
  - 4.** 1.0 credit in Arts or Social Sciences other than Psychology.
  - 5.** 1.0 Science Continuation Credit (not Psychology).
- (See p. 118).

**Fourth Year**

- 1.** Psychology 49.497.
- 2.** 1.0 credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.372★, 49.375★, 49.401★.
- 3.** 1.0 elective credit in Psychology.
- 4.** 1.0 credit above First-year level in Biology, Chemistry, Geology, Mathematics or Physics.
- 5.** 1.0 optional credit.

**B.Sc. with Honours in Neuroscience****Year 1**

- 1.** Psychology 49.100 as Social Science Elective
- 2.** Math 69.107★ and 69.117★
- 3.** Biology 61.103★ and 61.104★
- 4.** Chemistry 65.100
- 5.** Physics 75.101★ and 75.102★ or 75.107★ and 75.108★

**Year 2**

- 1.** Psychology 49.200
- 2.** Psychology 49.220★ and 49.270★
- 3.** Biology 61.201★ and 61.220★
- 4.** 1.0 arts or social science credit other than Psychology
- 5.** Chemistry 65.223★ and 65.224★

**Year 3**

- 1.** Mathematics 69.257★ and 69.258★ or Psychology 49.300
- 2.** One of Psychology 49.320 or 49.370
- 3.** 1.0 credit in Psychology from the Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.372★, 49.375★, 49.401★
- 4.** Biology 61.335★ and 61.214★
- 5.** 1.0 elective credit in Biology of Biochemistry

**Year 4**

- 1.** Psychology 49.497 or Biology 61.498 – Thesis in neurophysiology, animal behavior, neuropsychology or related topic
- 2.** 1.0 credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.372★, 49.375★, 49.401★



3. Biology 61.435 or equivalent
4. 1.0 advanced credit in Biology
5. 1.0 optional credit (unless Biology 61.103★ and 61.104★ is offered in lieu of OAC in Biology)

## Departmental Advice

The Department of Psychology maintains an Undergraduate Office, which operates daily from Monday to Thursday. There students will find advice about Psychology programs, course selections and program changes. Faculty and staff are available for discussion of career options and courses of study. The offices located in B552 Loeb Building, and may be reached by telephone at 613-520-2643.

## Graduate Program

The Department of Psychology offers studies leading to the degree of Master of Arts (M.A.) and to the Doctor of Philosophy (Ph.D.) degree. For details of these programs consult the Department and the Calendar of the Faculty of Graduate Studies and Research.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

First-Year Seminar in Psychology 01.136  
**Diversity in Psychological World Views**  
 See course description on p. 86.

First-Year Seminar in Psychology 01.137  
**Psychology and Criminal Justice**  
 See course description on p. 87.

First-Year Seminar in Psychology 01.138  
**Motivating Humans**  
 See course description on p. 87.

First-Year Seminar in Psychology 01.139  
**Parents and Parenting Theories, Concepts and Applications from Developmental Psychology**  
 See course description on p. 87.

First-Year Seminar in Psychology 01.140  
**Cognition: A Scientific Exploration of the Mind**  
 See course description on p. 87.

Psychology 49.100  
**Introductory Psychology**  
 The course provides a foundation for the scientific understanding of human and animal behaviour. Both biological and social science approaches are considered.  
 Lecture three hours a week.

Psychology 49.200  
**Introduction to Psychological Research and Statistics**  
 Various research methodologies and statistical ideas employed within contemporary psychology. Topics covered include experimental and observational techniques as well as basic data analysis using descriptive and inferential statistics.  
 Precludes additional credit for Anthropology 54.203, Mass Communication 27.201, Political Science 47.270, or Sociology 53.203.  
 Prerequisite: Psychology 49.100 or permission of the Department.  
 Lectures three hours a week.

Psychology 49.210★  
**Introduction to Social Psychology**  
 Introduction to contemporary theory and research in social psychology. Areas covered include attitude structure and change,

small groups and social learning.  
**Note:** Students who wish to substitute Sociology 53.210 for Psychology 49.210★ should consult the Undergraduate Office of the Department of Psychology. Students may not offer both Sociology 53.210 and Psychology 49.210★ for credit.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.220★  
**Biological Foundations of Behaviour**  
 A general introduction to the biological basis of behaviour with particular reference to biological mechanisms associated with sensory and perceptual processes, motivation, emotion, learning and cognition.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.230★  
**Origins of Modern Psychology**  
 The evolution of psychology in Europe and North America is surveyed with an emphasis on psychology as a specialized area of knowledge and practice in the nineteenth and twentieth centuries.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.240★  
**Introduction to Forensic Psychology**  
 Forensic psychology, including a critical review of theories, methods, and research findings. Topics covered may include development of offending, eyewitness testimony, victim studies, risk assessment, offender rehabilitation, offender classification, and police studies.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.250★  
**Foundations of Developmental Psychology**  
 Basic principles of developmental psychology with a concentration on theories and methods. Emphasis is on the psychology of childhood and adolescence.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.260★  
**Introduction to the Study of Personality**  
 An introduction to the study of personality. Consideration of problems, methods and theories.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.270★  
**Introduction to Cognitive Psychology**  
 A general introduction to cognitive processes, including a survey of theories, issues, methods and findings. Topics covered may include pattern recognition, attention, imagery, learning (animal and human), memory, language, and thinking.  
 Prerequisite: Psychology 49.100.  
 Lectures three hours a week.

Psychology 49.300  
**Design and Analysis in Psychological Research**  
 Techniques in data analysis, probability theory, sampling distribution theory and the ideas and procedures of estimation, classical and Bayesian approaches to hypothesis testing, linear regression and curve fitting, distribution free hypothesis testing, and the analysis of variance methods in experimental design. Limited enrolment.  
 Precludes additional credit for Economics 43.220, Mass Communication 27.400★ and 27.402★, or Sociology 53.370.  
 Prerequisites: Psychology 49.200 and permission of the Department. Intended for Honours students in Psychology.  
 Lectures and tutorial four hours a week.

Psychology 49.301★  
**Writing for Psychology**  
 An introduction to the processes and skills necessary to write successfully and to read critically in psychology. Among the topics to



be covered are time management, literature searches, bibliographic styles, writing styles, graphics and computer-based word processing. Practical exercises in literature review and writing will be presented.

Prerequisites: Psychology 49.200 and permission of the Department. Limited enrolment; intended for Honours students. Lectures, seminars and tutorial four hours a week.

#### Psychology 49.310

##### **Social Psychology (Honours Seminar)**

An analysis of historical and contemporary developments in social psychology theory, research and methodology. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200 and 49.210★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required; limited enrolment; intended for Honours students.

Lectures, seminars and tutorials six hours a week.

#### Psychology 49.311★

##### **Social Problems**

An analysis of one or more social problems from the point of view of social psychology. The problems studied vary from year to year and may include war and peace, prejudice and discrimination, gender roles, politics and social change, leisure and quality of working life.

Prerequisite: Psychology 49.210★.

Lectures and seminars three hours a week.

#### Psychology 49.312★

##### **Cognitive Processes in Social Psychology**

In-depth coverage of one or more sub-areas of social psychology introduced in Psychology 49.210★. Topics may include attitudes, impression formation, attribution of social causality, decision making, and social judgment.

Prerequisite: Psychology 49.210★.

Lectures and seminars three hours a week.

#### Psychology 49.313★

##### **Group Processes in Social Psychology**

In-depth coverage of one or more sub-areas of social psychology introduced in Psychology 49.210★. Topics may include interaction in the dyad, coalition formation in larger groups, history and theory of small group research, North American, West-European and East-European models of group behaviour, and training groups in industry.

Prerequisite: Psychology 49.210★.

Lectures and seminars three hours a week.

#### Psychology 49.320

##### **Behavioural Neuroscience (Honours Seminar)**

A detailed consideration of biological approaches to the study of behaviour and of research methods used in behavioural neuroscience.

Prerequisites: Psychology 49.200 (or 49.200★) and 49.220★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required; limited enrolment; intended for Honours students.

Lectures, seminars and laboratory tutorials six hours a week.

#### Psychology 49.322★

##### **Sensory Processes**

The physiological basis of sensation. Topics include sensory mechanisms, neuropsychological bases of perception and psychological phenomena encountered in the various senses.

Prerequisite: Psychology 49.220★.

Lectures and seminars three hours a week.

#### Psychology 49.323★

##### **Field Course in Animal Behaviour**

Offered in the Department of Biology as Biology 61.365★. Only those modules dealing with animal behaviour topics may be offered for Psychology credit.

Prerequisite: Permission of the Department.

#### Psychology 49.324★

##### **Drugs and Behaviour**

An introduction to synaptic mechanisms and the arrangements of the transmitter-specific brain systems, followed by a discussion of neuro-pharmacological bases of normal and abnormal behaviour and of the behavioural effects of various classes of psychoactive drugs such as stimulants, tranquilizers, opiates, etc.

Prerequisite: Psychology 49.220★.

Lectures and seminars three hours a week.

#### Psychology 49.325★

##### **Psychopharmacology and Behavioural Medicine**

An examination of the relationship between endogenous neuro-chemical, hormonal and immunological states and various physiological and behavioural pathologies. The contribution of psychological variables to these pathologies will be assessed.

Prerequisite: Psychology 49.324★ or permission of the Department.

Lectures and seminars three hours a week.

#### Psychology 49.327★

##### **Human Neuropsychology**

Human experimental neuropsychology with emphasis on the basic principles and methods used to study brain-behaviour relationships in normal and brain-damaged subjects. Topics include the development and structure of the human nervous system and the principles of neurology.

Prerequisite: Psychology 49.220★.

Lectures three hours a week.

#### Psychology 49.340

##### **Applied Psychology and Program Evaluation (Honours Seminar)**

Theoretical and empirical approaches to research and study in an area of applied psychology. Major methodological issues in program evaluation. Areas and programs covered may change from year to year and have included forensic and community psychology. Limited enrolment.

Prerequisites: Psychology 49.200 and either Psychology 49.210★ or 49.260★ and permission of the Department. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Intended for Honours students.

Lectures, seminars and tutorials, six hours a week.

#### Psychology 49.342★

##### **Criminal Behaviour**

An examination of behavioural approaches to the classification and treatment of offenders. Theories and research relevant to selected patterns of law-breaking and selected offender types are reviewed. The value of behaviour modification and counselling programs within prisons is examined.

Prerequisite: Psychology 49.210★ or 49.260★.

Lectures and seminars three hours a week.

#### Psychology 49.343★

##### **Addiction**

A critical review of theories and research on the acquisition and maintenance of addictive behaviour. The rationale and outcome of treatment programs for the abuse of alcohol, tobacco, the opiates and the amphetamines.

Prerequisites: 2.0 credits in Psychology including Psychology 49.100.

Lectures three hours a week.

#### Psychology 49.344★

##### **Sport and Performance Psychology**

An introduction to sport and performance psychology. Topics may include the role of play, sport and physical activity throughout the life span, as well as the mental and social factors involved in the pursuit of excellence in sports and the performing arts.

Prerequisites: Psychology 49.200 and at least one of Psychology 49.210★, 49.250★ or 49.260★.

Lectures and seminars three hours a week.

#### Psychology 49.345★

##### **Psychology of Motivation and Emotion**

Historical review of the concepts of motivation and emotion. Examination of such current concepts as anxiety, stress and de-



pression, among the emotions, and obesity, sexual behaviour and the need to achieve, among the motivations.

Prerequisite: Psychology 49.100.

Lectures and seminars three hours a week.

#### Psychology 49.346★

##### **Psychological Factors in Health and Illness**

Topics covered include sociocultural influences on physical health, psychological factors in physical disease, behavioural diagnostic techniques, pain and its regulation, factors affecting compliance to therapy, and behavioural variables in the treatment and management of physical disorders.

Prerequisite: Psychology 49.100.

Lectures and seminars three hours a week.

#### Psychology 49.347★

##### **Sleeping and Dreaming**

The development, organization and function of sleeping in humans and other species.

Prerequisites: Psychology 49.100 and 49.220★.

Lectures three hours a week.

#### Psychology 49.350

##### **Developmental Psychology (Honours Seminar)**

The major theoretical and empirical approaches within developmental psychology are examined through a detailed consideration of selected topics. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200, 49.250★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required. Limited enrolment, intended for Honours students.

Lectures, seminars and laboratory tutorials six hours a week.

#### Psychology 49.353★

##### **Psychology of Adolescence**

Psychological growth and development from puberty to maturity.

**Note:** No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisite: Psychology 49.250★.

Lectures and seminars three hours a week.

#### Psychology 49.354★

##### **Psychology of Adult Development and Aging**

Development and change after the age of physical maturity.

**Note:** No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisite: Psychology 49.250★.

Lectures three hours a week.

#### Psychology 49.355★

##### **Exceptional Children**

Selected topics concerning exceptional children such as mentally retarded, brain damaged, physically handicapped, disturbed and gifted children.

Prerequisite: Psychology 49.250★.

Lectures and seminars three hours a week.

#### Psychology 49.356★

##### **Cognitive Development**

The development of human cognition is examined with a focus on memory, thinking and language through the life span. Topics that may be considered include perceptual and language development, emergent literacy, development of strategies and development of reading and arithmetic skills.

**Note:** No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisites: Psychology 49.250★ and 49.270★.

Lectures three hours a week.

#### Psychology 49.357★

##### **Social Development**

The development of the individual is examined with a focus on social cognition and social behaviour. Topics that may be considered include the role of temperament in development, the role of parents, siblings and peers in social/emotional development, the development of prosocial and aggressive behaviour, moral development and the development of self and other understanding.

**Note:** No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisite: Psychology 49.250★.

Lectures three hours a week.

#### Psychology 49.360

##### **Personality (Honours Seminar)**

Issues and research methodologies in the study of personality. Included may be a consideration of research on psychopathology and personality theory, and evaluation of psychotherapy/counseling process and outcome. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200, 49.260★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required. Limited enrolment, intended for Honours students.

Lectures, seminars and laboratory tutorials six hours a week.

#### Psychology 49.363★

##### **Psychology of Women**

An examination of the literature on the psychology of women. Topics to be considered include: theories of female personality development, sex differences in ability and personality, biological influences on female behaviour, female sexuality, sex roles, women's roles throughout the life span.

Prerequisite: At least one of Psychology 49.210★, 49.250★ or 49.260★.

Lectures three hours a week.

#### Psychology 49.364★

##### **Abnormal Psychology**

History of the concept of behavioural abnormality. Theory and selected research dealing with the nature and etiology of behavioural abnormality.

Prerequisites: Psychology 49.260★ or 49.250★ or both Psychology 49.100 and Third-year standing.

Lectures three hours a week.

#### Psychology 49.366★

##### **Issues in Personality**

Topics selected from areas of interest in Personality. When offered, detailed topic descriptions are available from the departmental office prior to registration.

Prerequisites: Psychology 49.200 and 49.260★; or permission of the Department.

Lectures three hours a week.

#### Psychology 49.370

##### **Cognition**

Issues and research methodologies in the study of cognitive processes involved in perception, attention, language, reasoning, problem solving, decision making, human learning, and memory. The major theoretical issues and the empirical studies of human. Limited enrolment.

Prerequisites: Psychology 49.200, 49.270★ and permission of the Department. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Intended for Honours students.

Lectures, seminars, and laboratory tutorials six hours a week.

#### Psychology 49.372★

##### **Perception**

A consideration of data and theory concerning perceptual processes. Such topics as psychophysical methodology, perception of form and space and perceptual learning are discussed.

Prerequisites: Psychology 49.100 and one of Psychology 49.200 or Mathematics 69.107★ and 69.117★ (or equivalent).

Lectures three hours a week.



**Psychology 49.373★****Cognition and Instruction**

General theories of skill and knowledge acquisition as they relate to learning in specific subject matter areas, cognitive analyses of talks and performances that are instructionally relevant, and cognitive-theoretical analyses of instructional interventions.

Prerequisites: Third-year standing, Psychology 49.200 and 49.270★, and permission of the Department.

Lectures three hours a week.

**Psychology 49.380****Human Assessment (Honours Seminar)**

A critical appraisal of assessment techniques used for research, classification, and clinical/counselling purposes. Topics may include reliability, validity, and utility of tests, individual difference measurement in general psychology, ethical issues in testing, and alternatives to orthodox assessment. Laboratory exercises expose the student to selected psychometric and assessment techniques.

Prerequisites: Psychology 49.200 and at least one of 49.210★, 49.250★, 49.260★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required. Limited enrolment, intended for Honours students.

Lectures, seminars, and laboratory tutorials six hours a week.

**Psychology 49.391★****Practicum in Community Psychology**

Through seven-hour-a-week field placements and regular class forums, students are provided with the opportunity to pursue personal learning objectives concerning the application of psychology within the community. Academic requirements are satisfied through a term paper, which integrates the experiential knowledge gained in the placement with theoretical and empirical knowledge gained from the literature review.

**Note:** Students registered in the Criminology and Criminal Justice concentration should enrol in Psychology 49.393★ and/or 49.394★.

Prerequisite: Open to Third- and Fourth-year students in Psychology with permission of the Department.

**Psychology 49.392★****Practicum in Community Psychology**

Through seven-hour-a-week field placements and regular class forums, students are provided with the opportunity to pursue personal learning objectives concerning the application of psychology within the community. Academic requirements are satisfied through a term paper, which integrates the experiential knowledge gained in the placement with theoretical and empirical knowledge gained from the literature review.

**Note:** Students registered in the Criminology and Criminal Justice concentration should enrol in Psychology 49.393★ and/or 49.394★.

Prerequisite: Open to Third- and Fourth-year students in Psychology with permission of the Department.

**Psychology 49.393★****Field Placement: Criminology and Criminal Justice Concentration**

Experience in an agency setting provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice. There is no supplemental examination in this course.

Prerequisite: Open only to those students formally admitted to and registered in the Criminology and Criminal Justice Concentration.

**Psychology 49.394★****Field Placement: Criminology and Criminal Justice Concentration**

Experience in an agency setting provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice. There is no supplemental examination in this course.

Prerequisite: Open only to those students formally admitted to and registered in the Criminology and Criminal Justice Concentration.

**Psychology 49.401★****Special Topics in Psychology**

The topics of this course, to be offered as demand warrants, vary from year to year and are announced well in advance of the period of registration. A list of this year's topics can be obtained from the Psychology Undergraduate office (B552 Loeb Building) after March 1.

**Psychology 49.402★****Special Topics in Psychology**

The topics of this course, to be offered as demand warrants, vary from year to year and are announced well in advance of the period of registration. A list of this year's topics can be obtained from the Psychology Undergraduate office (B552 Loeb Building) after March 1.

**Psychology 49.403★****Special Topics in Psychology**

The topics of this course, to be offered as demand warrants, vary from year to year and are announced well in advance of the period of registration. A list of this year's topics can be obtained from the Psychology Undergraduate office (B552 Loeb Building) after March 1.

**Psychology 49.405★****Psychological Aspects of Product Design****Methodology**

Important issues in designing successful computerized products, including design guidelines, usability testing and user-needs analysis. Experienced designers and researchers from industry participate.

Prerequisites: Third-year standing and permission of the Department.

Lectures three hours a week.

**Psychology 49.430★****History and Theory of Psychology: Selected Topics**

Among topics that may be covered: the history of a particular time period, the history of a content area or issues related to theory in psychology.

Prerequisites: Third-year standing, and Psychology 49.230★ or permission of the Department.

Lectures and seminars three hours a week.

**Psychology 49.490★****Independent Study**

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Normally students may not offer more than one credit of independent study in their total program.

Prerequisite: Permission of the Department.

**Psychology 49.492★****Independent Study**

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Normally students may not offer more than one credit of independent study in their total program.

Prerequisite: Permission of the Department.

**Psychology 49.497****Thesis for B.Sc. with Honours in Psychology**

Open to all candidates for the B.Sc. degree with Honours in Psychology. A thesis project is conducted under the direct supervision of a Faculty Adviser from the Department of Psychology. The project may take the form of an experiment or other such work as meets with the approval of the Course Instructor. Faculty of Science regulations concerning the Honours degree including deadlines for submission are found on p. 79.

Prerequisites: Fourth-year Honours standing in Psychology; Psychology 49.300 or Mathematics 69.257★ and 69.259★ or Mathematics 69.217★ and 69.257★; one of Psychology 49.320, 49.350, 49.370 or 49.380; and permission of the Department.

Lectures as scheduled by the Instructor; other hours as arranged with the Faculty Adviser.



Psychology 49.498

**Thesis for B.A. with Honours in Psychology**

Open to all candidates for the B.A. (Honours) in Psychology. A thesis project is conducted under the direct supervision of a Faculty Adviser from the Department of Psychology. Faculty regulations concerning the Honours thesis, including deadlines for submissions, are detailed on p. 79.

Precludes additional credit for Psychology 49.497 and 49.499.

Prerequisites: Fourth-year Honours standing in Psychology, Psychology 49.300 or Mathematics 69.257★ and 69.259★ or Mathematics 69.217★ and 69.257★, one of Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370 or 49.380; and permission of the Department.

Lectures as scheduled by the Instructor; other hours as arranged with the Faculty Adviser. Lectures as scheduled by the Instructor; other hours as arranged with the Faculty Adviser.

Psychology 49.499

**Essay for B.A. with Honours in Psychology**

Open to all candidates for the B.A. degree with Honours in Psychology. An essay is prepared under the direct supervision of a Faculty Adviser from the Department of Psychology on a topic that represents a substantive area of psychological study and that is approved by the Faculty Adviser and the Course Instructor. Faculty regulations concerning the Honours essay, including deadline submissions, are detailed on p. 79.

Precludes additional credit for Psychology 49.497 and 49.498.

Prerequisites: Fourth-year Honours standing in Psychology, 49.300; 49.301★ and 0.5 credit in Psychology above the 200-level or one of Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370, 49.380; permission of the Department.

Lectures and discussion as scheduled by the Instructor; other hours as arranged with the Faculty Adviser.

# Public Administration

## (Public Affairs and Management)

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1022 Dunton Tower  
Telephone: 520-2547

### Academic Administration

**Director,** Frances Abele

**Supervisor of Undergraduate Studies,** Robin H. Farquhar

### Teaching Staff

#### Professors

**Manfred A. Blenefeld**, B.A. (Toronto), Ph.D. (London School of Economics) • **G.B. Doern**, B.Com. (Manitoba), M.A. (Carleton), Ph.D. (Queen's) • **Robln H. Farquhar**, B.A., M.A. (British Columbia), Ph.D. (Chicago), F.C.C.E.A. • **N.H. Lithwick**, B.A. (Western Ontario), Ph.D. (Harvard) • **P. Rianne Mahon**, B.A. (York), M.A., Ph.D. (Toronto) • **Allan M. Maslove**, B.A. (Manitoba), Ph.D. (Minnesota) • **Leslie A. Pal**, B.A. (Mount Allison), M.A., Ph.D. (Queen's) • **Eugene Swimmer**, B.A. (City College of New York), M.A. (Chicago), Ph.D. (Cornell) • **Stanley Lewis Winer**, B.A. (Carleton), M.A., Ph.D. (Johns Hopkins)

#### Associate Professors

**Frances D. Abele**, B.A. (Calgary, Toronto), M.A., Ph.D. (York) • **Leigh Anderson**, B.A. (Calgary), M.A., Ph.D. (Washington) • **Calum M. Carmichael**, B.A. (Western Ontario), M.P.A., Ph.D. (Princeton) • **Katherine A.H. Graham**, B.A. (York), M.A. (Queen's) • **Susan D. Phillips**, B.A. (Victoria), M.A. (Waterloo), M.A., Ph.D. (Carleton) • **Phillip Ryan**, B.A., M.A. (Toronto), Ph.D. (Carleton) • **Saul Schwartz**, B.A., Ph.D. (Wisconsin) • **Donald G. Swartz**, B.A., M.S., Ph.D. (Cornell) • **Glen Toner**, B.A. (Saskatchewan), M.A. (Alberta), Ph.D. (Carleton) • **George Warskett**, B.Sc. (London), M.Sc., Ph.D. (Queen's)

#### Adjunct Research Professors

**M. Hlcks • M. Seasons**

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### General Information

Public administration is the field of study concerned with the choice, design and implementation of government programs. It is analytical in the sense that it attempts to develop an understanding of why politicians and public servants act the way they do, and of what policies or practices are best able to achieve specified goals. It is practical in the sense that it considers actual policies or practices of government, and methods for their reform.

Public administration is also multi-disciplinary. It draws from other disciplines that have something to say about the opportunities and limitations governments face. Political science examines the political system of which the public service is a part, and the processes by which policy decisions are made. Economics considers the allocation of products and resources in markets with and without government involvement. Law addresses the legal control of public authorities and the rights of citizens. Sociology describes the behaviour and motivation of individuals working in bureaucratic settings. Accounting, quantitative methods, history, science, ethics — all can have a bearing on the field of public administration.

The School of Public Administration was established in 1953, and has the distinction of being the first of its kind in Canada. Students of public administration could wish for no better place to study than the national capital. Ottawa is home to many federal government departments and agencies, as well as national associations, research institutes and non-governmental organizations that deal with public policy issues. All are valuable sources of information for enquiring students. In addition, the federal government is a source of career-oriented summer and term employment.

The School offers two undergraduate programs in public administration. The Bachelor of Public Administration is an Honours program designed for students planning a career in the public

service. Although a majority of the graduates have traditionally found employment in the public sector, many have professions in the private sector, law, journalism and academia. The Certificate in Public Service Studies is designed for public servants without university training who would like to broaden their educational background through career-related part-time study. Credits taken under the Certificate can subsequently be applied toward a Bachelor of Arts or the Bachelor of Public Administration degree.

### Bachelor of Public Administration

#### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49) and all Faculty regulations (see p. 82), in addition to all School regulations and requirements as set out below.

#### Admission Requirements

Same as for Faculty of Public Affairs and Management. (See p. 41.)

Entry into Second year is dependent on academic promise, with students being assured of admission who have completed First year with 5.0 credits, achieved a grade of B- or better in both Economics 43.100 and Political Science 47.100, and achieved a CI of 7.00.

Probation is not available in the Public Administration Honours program.

Requirements for continuation in Honours are found on p. 81.



## Course Requirements

Candidates for the degree of Bachelor of Public Administration must satisfy all requirements for the B.A. with Honours. (See p. 78).

The Bachelor of Public Administration Program comprises 20.0 credits, of which 15.0 are made up by required courses. The School encourages students to take the required courses in the sequence outlined below, in order to avoid timetable conflicts. The School also encourages students to choose as options those courses that are prerequisites for the particular Management and Policy Electives they are considering.

The First year includes 2.0 credits made up by required courses. They introduce the major political ideas and institutions in Canada and other countries, and introduce the behaviour of consumers, producers and governments in individual markets and in the aggregate economy.

The Second and Third years include 8.0 credits made up by required courses that provide a broader background in political science and economics, and a basic knowledge of law, accounting and quantitative methods. The courses in political science emphasize the Canadian political system and the role of the public service within it. The courses in economics emphasize the taxing and spending powers of government. The law course addresses the legal context in which public authorities operate. The accounting and quantitative methods courses develop skills in the collection and interpretation of data useful to both private and public organizations. The Third year also includes a seminar in policy analysis that considers various theories of government decision making, with particular attention being paid to the integration of the insights offered by the various disciplines to which the students have already been introduced.

In Fourth year, students specialize. They select courses that reflect their own career or research interests from a wide selection of Management and Policy Electives. They also write an Honours Essay — an in-depth research paper written under the supervision of an individual faculty member. A topics seminar allows students to present their own research and to discuss that of others.

Full-time students in Fourth year with an Honours GPA of 9.0 or better and an overall GPA of 7.0 or better are eligible to apply for co-operative work terms. These work terms are four months in duration, and are at a junior officer level within the federal public service. Students on a work term may concurrently take no more than one half-credit course. Work terms provide students with opportunities to integrate the academic and applied aspects of public administration. They are neither mandatory nor guaranteed, and are not for credit.

The School requires students to have a reading knowledge of French. This requirement is satisfied by successfully completing one of the following courses, or by demonstrating an equivalent level of reading proficiency based on the placement procedure of the Department of French. The French requirement should be satisfied by the end of the Second year.

### French

20.106, 20.160 or 01.108

The course requirements of the B.P.A. program are listed below, by year:

### First Year

#### Economics (1.0 credit)

43.100

#### Political Science (1.0 credit)

47.100

#### Approved Options (3.0 credits)

Students are advised to meet the School's language requirement in their First year. If this is not feasible, then the language requirement must be completed by the end of the Second year of the program.

### Second Year

#### Business (1.0 credit)

42.101★ and 42.102★

#### Economics (1.0 credit)

43.201★, 43.211★

#### Law (1.0 credit)

51.205

#### Political Science (1.0 credit)

47.200 or 47.201

#### Approved Option (1.0 credit)

(French requirement must be completed if not completed in First year)

### Third Year

#### Economics (1.0 credit)

43.347★ or 43.441★; and 43.348★ or 43.442★

#### Public Administration (1.0 credit)

50.301★, 50.340★

#### Quantitative Methods (1.0 credit)

43.220 or 47.270

#### Organizational Behaviour (0.5 credit)

42.211★ or 42.317★/43.357★ or 51.345★ or 53.346★

#### Approved Options (1.5 credit)

### Fourth Year

#### Public Administration (1.5 credits)

Only Fourth year students, i.e. those who have already completed 14.0 credits, will be admitted into 50.401★ and 50.498.

50.401★, 50.498

## Management and Policy Electives (3.5 credits)

Courses drawn from the Management and Policy categories must total 3.5 credits, with at least 1.0 credit coming from each category. Courses other than those listed below may be used as electives, with the written approval of the Undergraduate Supervisor.

### (A) Management Electives (1.0 to 2.5 credits)

#### Business

42.313★, 42.312★, 42.361★

#### Economics

43.465★

#### Geography

45.433★ (82.333★)

#### Political Science

47.300★, 47.301★, 47.302★, 47.303★, 47.305★, 47.306★, 47.403★, 47.405, 47.406★, 47.407★, 47.408★, 47.409★, 47.416★, 47.417★, 47.441★, 47.446★, 47.447★, 47.448

#### Law

51.327★, 51.328★, 51.350★, 51.356★, 51.374★, 51.440★, 51.445★, 51.451★, 51.457★

#### Architecture

78.340★

### (B) Policy Electives (1.0 to 2.5 credits)

#### Philosophy

32.330

#### Economics

43.330★, 43.346★, 43.356★, 43.360★, 43.361★, 43.362★, 43.363★, 43.367★, 43.380★, 43.385★, 43.415, 43.445★, 43.457★, 43.458★, 43.461★, 43.467★, 43.468★, 43.480

**Geography**

45.320★, 45.433★

**Political Science**

47.230, 47.345★, 47.366★, 47.367★, 47.402★, 47.413★

**Law**

51.301★ (requires permission of the Department), 51.305★, 51.353, 51.354★, 51.380★, 51.467★

**Sociology-Anthropology**

53.373★, 53.380

**Mention: français**

Students proficient in French may wish to earn the University's "Mention: français" designation by taking the following pattern of courses in their degree program:

Students must undergo placement testing by the Department of French in order to satisfy the language requirement, and to protect the integrity of the initiative. At least 1.0 credit from the Second, Third or Fourth years must be made up by courses at Carleton.

**First Year**

1.0 credit in the advanced study of the French language.

**Second and Third Years**

2.0 credits made up by Political Science 47.201, 47.390, or by courses given entirely in French on French Canadian culture and heritage (French 20.270, 20.372★, 20.373★), or by other Second-year and Third-year courses offered entirely in French at Carleton or at another university and approved by the Undergraduate Supervisor of the School.

**Fourth Year**

1.0 credit made up either by Public Administration 50.498 Honours Essay written in French, or by Third- or Fourth-year courses offered entirely in French at Carleton or at another university and approved by the Undergraduate Supervisor at the School.

**Certificate in Public Service Studies**

The Certificate program is designed primarily for public employees who seek special training in public service subjects at the undergraduate level.

Courses taken for the Certificate may be credited towards a Bachelor of Public Administration or Bachelor of Arts degree. A transfer student from the Certificate program into the Bachelor of Public Administration program will normally be required to take at least 14.0 further credits in addition to those required for the Certificate, to be recommended for the degree. A transfer student into a Bachelor of Arts program will normally be required to take at least 9.0 further credits. At least 5.0 of the credits required for either degree must be completed after the awarding of the Certificate.

Full-time candidates for the Certificate are invited to enquire about possible financial aid.

**Admission Requirements**

The basic admission requirement is the completion of the OSSD including six OACs or equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see p. 62).

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits, including all core courses, for the Certificate at Carleton University.

Students who have completed an undergraduate degree are not eligible for admission to the Certificate program. They are encouraged, however, to investigate the undergraduate and graduate degree and diploma programs offered by the School.

**Course Requirements**

The following courses are required and the following order is suggested:

1. Political Science 47.100
2. Economics 43.100
3. History 24.130 or 24.233 or 24.234 or 24.235
4. Political Science 47.200
5. Public Administration 50.340★
6. 1.5 other credits chosen in consultation with the Director according to the needs of the student.

**Academic Standing**

A candidate for the Certificate must obtain a grade of C or better in at least half of the credits taken at Carleton University for the certificate.

**Courses**

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Public Administration 50.301★

**Policy Analysis for Public Administration**

A multi-disciplinary seminar that involves the participation of several faculty members. It explores various theoretical approaches for analyzing the origins and effects of problems in public policy, and evaluating alternative responses to those problems.

Prerequisite: Third-year standing in Public Administration.

Seminar three hours a week.

Public Administration 50.340★

**Introduction to Public Administration and Public Policy**

An introduction to the theoretical and empirical foundations of the fields of public administration and public policy at federal, provincial and municipal levels.

Precludes additional credit for Political Science 47.240.

Prerequisites: Political Science 47.200 and Third-year standing in Public Administration or an appropriate level in the CPSS Program.

Lectures and discussion three hours a week.

Public Administration 50.401★

**Selected Topics in Public Administration**

A seminar that provides an opportunity for interaction between students and faculty directed toward examining current issues in Public Administration.

Prerequisite: Public Administration 50.301★.

Seminar three hours a week.

Public Administration 50.498

**Honours Essay**

Tutorial hours arranged.



# College of the Humanities: Religion (Arts and Social Sciences)

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Telephone: 520-2100

Fax: 520-3962

## Academic Administration

**Co-ordinator,** Joseph G. Ramisch

**Supervisor of Graduate Studies,** Joseph G. Ramisch

**Supervisor of B.A. (Honours) Studies,** To be announced

**Supervisor of B.A. Studies,** To be announced

## Teaching Staff

### Professors

**John P. Dourley,** B.A., L.Ph., S.T.L., M.Th. (Ottawa), M.A. (Toronto), Ph.D. (Fordham) • **S.G. Wilson,** B.A., Ph.D. (Durham)

### Associate Professors

**Leonard T. Librande,** B.A. (St. Louis), M.A. (Syracuse), Ph.D. (McGill) • **Joseph G. Ramisch,** B.A. (St. Mary's), M.A., Ph.D. (Catholic University of America) • **Eugene Rothman,** B.A. (Jerusalem), M.A. (Columbia), Ph.D. (London)

### Assistant Professor

**Noel A. Salmond,** B.F.A., (Nova Scotia), M.A. (Concordia)

### Adjunct Research Professors

**H.V. Dehejia • Nalini Devdas • A.R. Gualtieri**

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## General Information

The general purpose of courses offered in this Discipline is to promote a sensitive and intellectually mature understanding of the basic ideas and concerns of outstanding religious leaders and movements irrespective of whether these coincide or conflict with individual convictions. Religious writings are studied critically, in an attempt to understand their meaning, to grapple with their problems and to assess their significance both in their original cultural context and for our own situation.

## Programs of Study

Students who elect Religion as their B.A. (Honours) or B.A. subject will consult with their respective adviser before registration each year.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those for First Year Seminars and Breadth courses (see p. 72), in addition to all Major regulations and requirements as set out below.

## Honours Programs

### B.A. (Honours) in Religion

The Honours program requires 10.0 credits in Religion:

1. 34.100★, 34.101★, and 34.125★

2. 34.331★

3. 34.480 and 34.498 (2.0 credits)

4. 5.5 additional credits in Religion, 2.0 credits of which must be at the 300-level or above.

Courses must be selected in consultation with the Undergraduate Adviser.

## Combined Honours Program

The Combined Honours program requires 7.0 credits in Religion:

1. 34.100★, 34.101★, and 34.125★

2. 34.331★

3. 34.480★ and 34.499 (1.0 credit Honours Essay).

4. An additional 1.0 credit at the 300-level or above.

Courses must be selected in consultation with the Undergraduate Adviser.

## Combined Honours in Philosophy and Religion

**Philosophy:** At least 7.0 credits including:

1. an introductory course or equivalent;

2. 6.0 credits beyond the 100-level including:

(a) 2.0 credits in history of philosophy;

(b) Philosophy 32.260, or if taken already as Religion 34.260 or if not available, 1.0 credit in philosophical problems, selected in consultation with the Honours Adviser;

(c) 1.0 credit at the 400-level.

**Religion:** Requirements are those listed above for the Combined Honours program.

## B.A. Programs

A B.A. program requires 6.0 credits in Religion, including 34.100★, 34.101★, and 34.125★, 34.331★ and an additional 1.0 credit at the 300-level or above.

Courses must be selected in consultation with the Undergraduate Adviser.

## Combined B.A. Programs

A B.A. program combining Religion with another subject must include at least 5.0 credits in Religion, including 34.331★. Of these 5.0 credits, there must be at least 0.5 credit in each of the three main areas of study as set forth above.

Courses must be selected in consultation with the Undergraduate Adviser.

## Concentration in Jewish Studies

Students majoring in Religion who include as part of their requirements the following courses in Jewish Studies are eligible for the notation of Concentration in Jewish Studies:

34.226★, 34.258★, 34.271★, 34.278, 34.355★, and one of 34.257★ or 34.259★.

## Minor in Religion

A Minor in Religion requires 4.0 credits in Religion, including 1.0 credit at the 100-level and at least 1.0 credit at the 300-level or above.

Courses must be selected in consultation with the Undergraduate Adviser.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Religion 34.100★

#### **Introduction to Judaism, Christianity, and Islam**

A survey of the basic beliefs and practices of these major religious traditions from their beginnings to the present.

Lecture three hours a week.

### Religion 34.101★

#### **Introduction to Hinduism, Buddhism, and the Religions of China and Japan**

A survey of the basic beliefs and practices of these major religious traditions from their beginnings to the present.

Lecture three hours a week.

### Religion 34.125★

#### **Interpretations of Religion**

Modern enquiries into the nature of religion from various perspectives such as anthropology, history, psychology, sociology and theology. Different myths, symbols, scriptures, doctrines, codes and rituals of religious traditions.

Precludes additional credit for Religion 34.125 or 34.202.

Lecture three hours a week.

### Religion 34.126

#### **The Interpretations of Religious Experience**

The variety of religious experiences and their interpretations: myth, literature, art and religious doctrine. Topics include time, self, the Other, journey and wisdom. Examples ranging from sha-

manistic experience to the abstractions of Buddhist philosophy. Lectures three hours a week.

### Religion 34.203★

#### **Women in the Christian Tradition**

An examination of the status of women in Christianity, including such themes as images of women and gender roles in churches, recent feminist theologies, practical questions such as inclusive language and the ordination of women, and alternative approaches to Christian spirituality.

Lecture three hours a week.

### Religion 34.205★

#### **Introduction to the Hindu Tradition**

An introduction to the basic beliefs, myths and symbols, methods of meditation and ethical principles developed in the main branches of the Hindu tradition. The study includes a survey of movements stemming from the Hindu tradition such as Transcendental Meditation and Krishna Consciousness.

Precludes additional credit for Religion 34.105★.

Lecture three hours a week.

### Religion 34.206★

#### **The Hindu Tradition: The Formative Period**

A historical survey of the formation of the Hindu scriptures, the development of basic philosophic concepts and the establishment of the Shiva, Vishnu and Goddess traditions. Discussions of Hindu practices of meditation and presentations of Hindu religious art are included.

Prerequisite: Second-year standing.

Lecture two hours a week.

### Religion 34.212★

#### **Graeco-Roman Religions**

A study of selected topics in Graeco-Roman religion, such as Homeric religion, chthonic cults, the Sophists, astrology, ruler cults, mystery religions and gnosticism.

Lecture three hours a week.

### Religion 34.216★

#### **Introduction to the Buddhist Tradition**

An introduction to the basic beliefs and practices of the Buddhist tradition and a brief survey of its development and transformations in India, Sri Lanka, Southeast Asia, Tibet, China and Japan.

Precludes additional credit for Religion 34.106★.

Lecture three hours a week.

### Religion 34.222

#### **Introduction to the Psychology of Religion**

An introduction to the psychology of religion, which examines the major contributions of psychology to the study of religion, religious experience, and the religious personality through various individuals and schools such as those of James, Freud, Jung, Fromm, Erickson and Maslow.

Precludes additional credit for Religion 34.112★ and 34.122.

Lecture three hours a week.

### Religion 34.226★

#### **Introduction to the Literature of the Hebrew Bible (Old Testament)**

An examination of the books of the Hebrew Bible. Emphasis is given to literary approaches to the text, that is, to the kind of disciplined attention that has illuminated the manifold examples of world literature through a variety of critical approaches.

Precludes additional credit for Religion 34.102★ and 34.120.

Lecture three hours a week.

### Religion 34.227★

#### **The History and Literature of Early Christianity**

The rise of the Christian movement as revealed in the New Testament and other early evidence. Topics will include the Hellenistic and Jewish context, Jesus, Paul, Jewish Christianity, the Johannine writings, feminist and sociological approaches to the early church.

Precludes additional credit for Religion 34.103★ and 34.120.

Lecture three hours a week.



Religion 34.230 ★

**Mysticism**

A historical and functional study of mystical experience in its religious context, relying on examples from selected traditions such as the Christian, Buddhist, Hindu, Jewish and Muslim. Precludes additional credit for Religion 34.230.

Lecture three hours a week.

Religion 34.231 ★

**Selected Topics in the Study of Mysticism**

Contents of this course may vary from year to year.

Lecture three hours a week.

Religion 34.235

**Religion and Contemporary Moral Issues**

The nature of religious ethics, both the explicit moral principles and rules of various religious traditions, and the general moral perspectives. A selection of contemporary moral issues examined in depth.

Prerequisite: Other Religion course or permission of the Department.

Lecture three hours a week.

Religion 34.237 ★

**Selected Topics in Religion**

Contents of this course vary from year to year.

Lecture three hours a week.

Religion 34.238 ★

**Death and Afterlife**

The meaning of death and afterlife in some religious traditions and secular philosophies with emphasis on the Hindu teaching of the immortal soul; the Hebraic idea of collective survival; the Christian doctrine of resurrection of the body; the Buddhist conception of no-soul and nirvana.

Lecture three hours a week.

Religion 34.243

**Religion and Society**

Cross-cultural survey of religious institutions, with attention to theories and methodologies in the study of religion. Topics include myth, totemism, cults, ritual, altered states of consciousness, and the relationship of religion to other social institutions and processes. (Also listed as Sociology-Anthropology 56.243.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lecture three hours a week.

Religion 34.257 ★

**Christianity**

The range of Christian thought and history from the time of Jesus to the present.

Precludes additional credit for Religion 34.107 ★.

Lecture three hours a week.

Religion 34.258 ★

**Introduction to Judaism and the Jewish People**

The history of Judaism and the Jewish people from the Second Temple until the present day. The organization, basic beliefs, social and ethical practices of the Jews and Judaism.

Precludes additional credit for Religion 34.108 ★.

Lecture three hours a week.

Religion 34.259 ★

**Introduction to Islam**

An introduction to the Muslim religious tradition and investigation of its organization, basic beliefs, social and ethical principles and practices.

Precludes additional credit for Religion 34.109 ★.

Lecture three hours a week.

Religion 34.260

**Philosophy of Religion**

A philosophical examination of some characteristic concepts of religion, such as faith, hope, worship, revelation, miracle, God.

(Also listed as Philosophy 32.260.)

Prerequisite: A course in Philosophy or Second-year standing.

Lecture three hours a week.

Religion 34.271 ★

**Judaism and the Jewish People: The Early Period**

A study of the history of Judaism and the Jewish people from the Maccabees to the Rabbinic Age. Attention is given to the rise of sectarian movements (Pharisees, Saducees and Qumran Covenanters), the rise of Christianity, revolutionaries such as the Zealots and Bar Kochba, the Jewish responses to Hellenism, the reshaping of Judaism after the destruction of the Second Temple, and Rabbinic Judaism in Palestine and the Diaspora.

Lecture two hours a week.

Religion 34.272 ★

**Islam in the Modern World**

An examination of Islam in the last two hundred years, including the nature of the Islamic resurgence and the new forms of Islamic vitality.

Precludes additional credit for Religion 34.274.

Lecture three hours a week.

Religion 34.278

**The Middle East: 1798 to the Present**

The history of the development of the civilization and culture of the Middle East from 1798 to the present with special emphasis on the mutual discovery of East and West, the search for identity, the impact of colonialism and international rivalry, and social, religious and cultural change within a continuing tradition. (Also listed as History 24.278.)

Lecture two hours a week.

Religion 34.303 ★

**Paul Tillich and the Divine-Human Relation**

The course examines Tillich's conception of God as Ground of Being and Depth of Reason, drawing on selections from his essays, lesser works and *Systematic Theology*.

Precludes additional credit for Religion 34.306.

Lecture three hours a week.

Religion 34.304 ★

**Teilhard de Chardin: Christianity and Evolution**

The course examines Teilhard's correlation of a Christian with an evolutionary perspective from his early writings (First World War) through to his late synoptic essays.

Precludes additional credit for Religion 34.306.

Lecture three hours a week.

Religion 34.305 ★

**C.G. Jung and the Psychology of Religion**

The course examines Jung's major statements in the *Collected Works* about the psychoanalysis of religion and the implications this has for the understanding of humanity as religious.

Precludes additional credit for Religion 34.306.

Lecture three hours a week.

Religion 34.320 ★

**Selected Topics in Indian Thought**

Contents of this course vary from year to year.

Prerequisite: One course in Buddhism.

Lecture three hours a week.

Religion 34.325 ★

**Selected Topics of Women in Religion**

Descriptive and critical analysis of perspectives on women, sex, and gender in selected religious traditions. Contents of this course may vary from year to year.

Prerequisite: Second-year standing or better.

Lecture three hours a week.

Religion 34.328

**The Life and Teaching of Jesus**

A systematic study of the available records of the life of Jesus. Lectures, readings and discussions on the historical context of the life of Jesus and on the milieu within which the records developed.

Precludes additional credit for Religion 34.225.

Lecture three hours a week.

## Religion 34.330

**The Life and Thought of Paul**

Paul's relation to the Old Testament, Rabbinic Judaism, and Hellenism; the mission to the Gentiles; the "mysticism" of Paul; central ideas such as justification by faith, predestination, the Holy Spirit, the Church. Consideration of the situation and message of each of Paul's writings.

Prerequisite: Second-year standing or better.

Lecture three hours a week.

## Religion 34.331 ★

**Theory and Method in the Study of Religion**

Examination of selected theoretical and methodological models used in the interpretation of religious data. Contents of this course vary from year to year.

Prerequisite: Second-year standing or better.

Lecture two hours a week.

## Religion 34.332 ★

**Studies on Christianity**

Selected problems in the study of the Christian religion.

Prerequisite: One course in Religion.

Lecture three hours a week.

## Religion 34.336 ★

**Selected Topics in Religion**

Contents of this course may vary from year to year.

Prerequisite: Second-year standing or better.

Lecture three hours a week.

## Religion 34.338 ★

**Selected Topics in Early Christian History**

Contents of this course vary from year to year.

Prerequisite: Second-year standing or better.

Lecture three hours a week.

## Religion 34.342 ★

**Selected Topics in Islam**

Contents of this course vary from year to year.

Prerequisite: Second-year standing or better.

Lecture three hours a week.

## Religion 34.355 ★

**Selected Topics in Judaism and Jewish History**

Contents of this course may vary from year to year.

Prerequisite: Second-year or higher standing.

Seminar three hours a week.

## Religion 34.365 ★

**Historic Figures in the Psychology of Religion**

Discussion of religiously significant texts from the works of William James, Sigmund Freud and C.G. Jung.

Precludes additional credit for Religion 34.265 ★.

Prerequisite: Second-year standing or permission of the Discipline.

Lecture three hours a week.

## Religion 34.366 ★

**Contemporary Psychologies of Religion**

An examination of developmental, experimental, humanistic and existential theories in psychology as these shed light on religious thought, behaviour and institutions.

Precludes additional credit for Religion 34.266 ★.

Prerequisite: Second-year standing or permission of the Discipline.

Lecture three hours a week.

## Religion 34.370

**The Development of Christian Thought**

Historical and cultural development of selected aspects of Christian thought from its origins to the modern period. Cultural shifts, doctrines of God and Christ, the church as an institution; conciliarism and reform; the Protestant Reformation and its aftermath.

Precludes additional credit for Religion 34.270.

Prerequisite: Second-year standing.

Lecture three hours a week.

## Religion 34.378 ★

**Reformation Europe**

A history of the Protestant and Catholic Reformations of the sixteenth century, with special emphasis on the theological disputes of the protagonists and the impact of these disputes on the social,

political and cultural developments of the era. (Also listed as History 24.378 ★.)

Prerequisite: A 200-level History course.

Lecture three hours a week.

## Religion 34.380

**Modern Religious Thought**

An examination of the major currents and developments of religious and philosophical thought among Protestants and Catholics in the nineteenth and twentieth centuries. Protestant developments are traced from the Kantian critique to the present and Catholic thought from its response to the French Revolution up to and beyond Vatican II.

Precludes additional credit for Religion 34.280.

Prerequisite: One course in Religion or Philosophy.

Lecture three hours a week.

## Religion 34.390

**Selected Problems in Interpretation**

A course conducted on a tutorial or seminar basis designed to enable advanced students to pursue interests in selected areas of religion.

Prerequisite: Permission of the Discipline.

Tutorial/seminar three hours a week.

## Religion 34.391 ★

**Selected Problems in Interpretation**

A course conducted on a tutorial or seminar basis designed to enable advanced students to pursue interests in selected areas of religion.

Prerequisite: Permission of the Discipline.

Tutorial/seminar three hours a week.

## Religion 34.480 ★

**Topics in Religious Studies**

A seminar on a topic in religious studies. The topic will vary from year to year. The topic for 1998-99 will be Contemporary Canadian Jewish Community: The contemporary Canadian Jewish community, including themes such as history, community organization, religion and the community, Canada and Israel, and immigration.

Prerequisite: Third-year standing in B.A. (Honours) or Combined B.A. (Honours) in Religion.

Seminar three hours a week.

## Religion 34.481 ★

**Tutorial**

A tutorial on a topic in religious studies. Contents of the tutorial to be arranged with the supervising faculty member.

Prerequisite: Third-year standing in B.A. (Honours) or Combined B.A. (Honours) in Religion.

## Religion 34.498

**Honours Essay**

A written proposal in consultation with a Program Director, consisting of title, outline and bibliography must be submitted to and approved by the Honours Essay Proposal Board. The essay of approximately 16,000 words, is jointly evaluated on its completion by the Departmental Director and one other member of the department. (2.0 credits)

Precludes additional credit for Religion 34.499. (Consult Departmental Document for further details.)

Prerequisite: Fourth-year standing in Religion and permission of the Discipline.

Seminar three hours a week.

## Religion 34.499

**Honours Essay**

A written proposal in consultation with a Program Director, consisting of title, outline and bibliography must be submitted to and approved by the Honours Essay Proposal Board. The essay of approximately 10,000 words, is jointly evaluated on its completion



by the Departmental Director and one other member of the department. (2.0 credits)

Precludes additional credit for Religion 34.498. (Consult Departmental Document for further details.)

Prerequisite: Fourth-year standing in Combined Honours in Religion and permission of the Discipline.

Seminar three hours a week.

- **Language Courses**

Language courses are intended for students specializing in a particular religious tradition. They are offered according to the availability of members of the Discipline. Courses taken at the 200-level or above will be mainly independent study under the supervision of a member of the Discipline. Students interested in taking these courses should consult the Co-ordinator chair.

Religion 34.192

**Elementary Language Tutorial**

Elementary study of the language required for studying a religious tradition. Restricted to students registered in a Religion program.

Tutorial two hours a week.

Religion 34.292

**Intermediate Language Tutorial**

Intermediate study of the language required for studying a religious tradition. Restricted to students registered in a Religion program.

Prerequisite: Religion 34.192 or permission of the Discipline.

Tutorial two hours a week.

Religion 34.392

**Advanced Language Tutorial**

Advanced study of the language required for studying a religious tradition. Restricted to students registered in a Religion program.

Prerequisite: Religion 34.292 or permission of the Discipline.

Tutorial two hours a week.

# School of Languages, Literatures and Comparative Literary Studies

## Russian

### (Arts and Social Sciences)

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1416 Dunton Tower  
Telephone: 520-5644

#### General Information

Students currently enrolled in programs offered by the Discipline of Russian are governed by the requirements contained in the 1997-98 *Undergraduate Calendar*.

#### Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Russian 36.100

##### **Introductory Russian**

Basic skills in oral comprehension and an adequate grasp of the mechanics of the language. Oral practice in the language laboratory. Compulsory attendance for both lecture and laboratory work.

Precludes additional credit for Russian 36.120.

Lecture four hours a week, laboratory one hour a week.

Russian 36.120

##### **Intensive Russian**

Compressed two-year study of the Russian language. Provides a rapid and thorough grounding in how to read, write and speak Russian. No auditors.

Precludes additional credit for Russian 36.100 and 36.202.

Lecture seven hours a week, laboratory one hour a week.

Russian 36.201 ★

##### **Spoken Russian**

Oral practice of vocabulary to enable students to handle a range of everyday topics and social situations, and produce simple narration or description.

Prerequisite: Russian 36.100 or permission of the School.

**Note:** It is recommended that the course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.202

##### **Intermediate Russian**

Grammar studies, reading and listening comprehension and conversation. Compulsory attendance for both lectures and laboratory.

Precludes additional credit for Russian 36.120 and 36.220.

Prerequisite: Russian 36.100 or permission of the School.

Lecture three hours a week, laboratory one hour a week.

Russian 36.203

##### **Russian Grammar**

A systematic review of Russian grammar taught in English. Word formation, and morphology, with special emphasis on the most difficult parts of Russian grammar for non-Russians.

Prerequisite: A grade of C or better in Russian 36.100 or permission of the School.

**Note:** It is recommended that the course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.205 ★

##### **Written Russian**

A sequel to Russian 36.201 ★ emphasizing comprehension and self-expression in written Russian.

Prerequisite: Russian 36.201 ★ or permission of the School.

**Note:** It is recommended that this course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.220

##### **Business Russian**

Acquisition of basic grammatical knowledge, comprehension and minimal vocabulary for Russian business language. Reading and writing material based on language of business and commerce.

Precludes additional credit for Russian 36.120 and 36.202.

Prerequisite: Russian 36.100 or permission of the School.

Lecture three hours a week, laboratory one hour a week.

Russian 36.260

##### **Russian Literature in English Translation C Nineteenth and Twentieth Centuries**

Selected works of Russian literature in the context of European literature and against their social and political backgrounds. Includes works by Pushkin, Gogol, Turgenev, Leo Tolstoy, Dostoevsky, Chekhov, Gorky, Bulgakov, Pasternak, Solzhenitsyn.

Lecture two hours a week.

Russian 36.301 ★

##### **Advanced Spoken Russian**

A sequel to Russian 36.201 ★.

Prerequisite: Russian 36.201 ★ or permission of the School.

Lecture three hours a week.

Russian 36.302

##### **Advanced Russian**

Continuation of the basic Russian sequence. Introduction to prose composition and essay writing; further development of comprehension and self-expression in Russian. Compulsory attendance.

Prerequisite: Russian 36.120 or 36.202 or permission of the School.

Lecture three hours a week.

Russian 36.305 ★

##### **Advanced Written Russian**

A sequel to Russian 36.205 ★. Composition and essay writing in Russian.

Prerequisites: Russian 36.202, 36.205 ★ and 36.301 ★, or permission of the School.

Lecture three hours a week.



**Russian 36.307 ★**

**Russian Syntax**

Fundamental concepts of Russian syntax (parts of the sentence, types of sentences, types of clauses etc.) with extensive exercises.

Precludes additional credit for Russian 36.303.

Prerequisite: Russian 36.202 and 36.203 or permission of the School.

Lecture three hours a week.

**Russian 36.308 ★**

**Russian Translation**

Principles and practice of translation of literary and non-literary texts from Russian to English.

Precludes additional credit for Russian 36.303.

Prerequisite: Russian 36.307 ★ or permission of the School.

Lecture three hours a week.

**Russian 36.407**

**Major Authors: Pushkin to Chekhov**

Selected texts in Russian from major authors of the nineteenth century : Pushkin, Gogol, Turgenev, Dostoevsky, Tolstoy, Chekhov. Reading literary texts in historical context; artistic developments in poetry and fiction throughout the period.

Precludes additional credit for Russian 36.335.

Prerequisites: A Russian course at the 300-level and permission of the School.

Tutorial.

**Russian 36.409**

**Major Authors: Gorky to Solzhenitsyn**

A study of selected texts in Russian from authors of the twentieth century such as Gorky, Babel, Blok, Mayakovsky, Bulgakov, Zamyatin, Sholokhov and Solzhenitsyn. Emphasis is placed on the reading of literary texts in the context of political and social change and on the study of literary trends, themes and experiments.

Precludes additional credit for Russian 36.355.

Prerequisites: A Russian course at the 300-level and permission of the School.

**Russian 36.410 ★**

**Russian Style and Composition I**

Introduction to stylistics and expressive writing. Analysis of semantic and structural peculiarities of modern Russian. No auditors.

Precludes additional credit for Russian 36.304 and 36.404.

Prerequisites: Russian 36.302 and permission of the School.

**Russian 36.411 ★**

**Russian Style and Composition II.**

A continuation of Russian 36.410 ★. No auditors.

Precludes additional credit for Russian 36.304 and 36.404.

Prerequisites: Russian 36.410 ★ and permission of the School.

**Russian 36.420 ★**

**Russian for International Relations I**

Reading, translation, discussion and writing in Russian of documents, reports and articles. Readings from the Russian Press are studied to provide insights into political and commercial relations between Canada and Russia. No auditors.

Precludes additional credit for Russian 36.320 ★.

Prerequisites: Russian 36.302, 36.307 ★ and 36.308 ★ or permission of the School.

Lecture three hours a week.

**Russian 36.421 ★**

**Russian for International Relations II**

A continuation of Russian 36.420 ★. No auditors.

Precludes additional credit for Russian 36.321 ★.

Prerequisite: Russian 36.420 ★ or permission of the School.

Lecture three hours a week.

**Russian 36.435 ★**

**Tutorial: Special Topic (Literature)**

A tutorial offering advanced study of a literary topic in the area of literary history, criticism or theory, to be arranged in consultation with a member of Russian. No auditors.

Prerequisites: A Russian course at the 300-level and permission of the School.

Tutorial.

**Russian 36.455**

**Tutorial: Special Topic (Post-1917 Period)**

A tutorial offering study of a topic related to the literature of the Revolution and after, to be arranged in consultation with a member of Russian. No auditors.

Prerequisites: A Russian course at the 300-level and permission of the School.

**Russian 36.493 ★**

**Translation Tutorial I**

This course is intended for students in the Institute of Central/East European and Russian-Area Studies, although other students may enrol with the permission of Russian. It offers work in translation to and from Russian, and the objectives of the course are co-ordinated with the specific needs of students in the Institute. No auditors.

Prerequisites: A 300-level Russian language course or equivalent and permission of the School.

**Russian 36.494 ★**

**Translation Tutorial II**

A continuation of Russian 36.493 ★. No auditors.

Prerequisites: Russian 36.493 ★ and permission of the School.

**Russian 36.495 ★**

**Tutorial: Special Topic (Language)**

A tutorial on topics of language or linguistics, providing individual or small group study. For students in the Translation Option, it will be a practicum in translation with analysis and criticism of selected professional translations. No auditors.

Prerequisites: Russian 36.302 or 36.307 ★ and 36.308 ★ and permission of the School.

**Russian 36.496 ★**

**Tutorial: Special Subject**

A tutorial on a selected literary or language topic, providing individual or small group study. No auditors.

Prerequisites: A Russian course at the 400-level and permission of the School.

**Russian 36.499**

**Honours Research Project**

Independent research and writing under the supervision of a member of the discipline. Open to students in the Fourth year of Honours. Written assignment for the course is a piece of work of approximately 8,000 words.

# Social Work

## (Public Affairs and Management)

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### Academic Administration

**Director, Allan Moscovitch**

**Supervisor of Undergraduate Studies, Elizabeth Whitmore**

**Supervisor of Graduate Studies, Gerald de Montigny**

### Teaching Staff

#### Professors

**Allan S. Moscovitch, B.A. (Carleton), M.A. (Essex) • Gillian Walker, B.A., M.S.W. (British Columbia), Ph.D. (Toronto)**

#### Associate Professors

**Hugh Armstrong, B.A., M.A. (Carleton), Ph.D. (Montréal) • Colleen Lundy, B.Sc. (Ottawa), M.S.W. (Carleton), Ph.D. (Florida State) • Gerald de Montigny, B.A. (British Columbia), M.S.W. (Toronto), M.A., Ph.D. (O.I.S.E.) • Diana Ralph, B.A. (Wayne State), M.S.W. (Columbia), M.A., Ph.D. (Regina) • Elizabeth Whitmore, B.A., M.S.W. (Boston), Ph.D. (Cornell)**

#### Assistant Professors

**Roy Hanes, B.A. (Dalhousie), M.S.W. (Carleton), Ph.D. (McGill) • Steven Hick, B.A., B.S.W. (McMaster), M.A. (Carleton), Ph.D. (Toronto) • Therese Jennissen, B.A. (Alberta), M.S.W. (Carleton), Ph.D. (McGill) • Bernice Moreau, B.A., M.A. (Dalhousie), M.A. (Institute for Christian Studies), Ph.D. (Toronto) • Malcolm Saulis, B.A. (St. Thomas), M.S.W. (Wilfrid Laurier)**

#### Instructors

**Linda Advokaat, B.A. (U. of California), M.A., (Carleton) • Rheal Brant-Hall, B.S.W. (Victoria) • Shirley Judge, Testamur in Social Studies (Bristol) • Rashmi Luther, B.A., M.S.W. (Carleton) • Cecilia Talana, B.A. (Catholic University, Buenos Aires), M.Ed. (Ottawa) • Martha Wiebe, B.A. (Saskatchewan), M.A. (Waterloo Lutheran)**

#### Adjunct Professors

**S. James Albert • Peter Findlay • K.A. Fuerst • Helen Levine • Edith E. Moore**

### General Information

The Bachelor of Social Work Honours program combines a liberal arts education with professional preparation. The primary objective of the program is to provide students with the knowledge and skills necessary to begin entry level practice in social work.

The School's orientation places a strong emphasis on sensitivity to the individual and on the development of innovative strategies for working with people both individually and collectively. The School also stresses an awareness of and a capacity for analysis of the social policies and administrative practices that affect the lives of many people in our society. Analyses of class, gender and race relations are considered central to the program. The program's core courses and field practice are structured so that students develop first a broad understanding of societal forces and then skills in direct practice, social administration and policy.

The Carleton School of Social Work is committed to educational equity. The society in which we live and of which social work is a constituent part is composed of people distinguished by their differential access to power—economic, political, and social. The School affirms the principle that all people should have the opportunity to learn in a supportive environment. Educational equity applies, but is not limited to persons of aboriginal and racial, cultural,

and/or ethnic minority origin; persons with disabilities; lesbian, gay and bisexual persons; and persons disadvantaged by their gender or economic position. Educational equity is consistent with a continuing commitment to meeting high standards of academic practice competence.

Educational equity provides for social work education to people who otherwise might not have such an opportunity. It also brings into social work students whose life experiences enable them to challenge the accepted structure of social work itself.

### Admission Requirements

This Calendar specifies the general conditions of entry that apply to all undergraduate programs. (See p. 32.)

For admission to First year of Social Work, there are two components:

1. The OSSD or the equivalent, with an average of 65 percent or better, including six OACs or the successful completion of Qualifying-University year.
2. Preference will be given to applicants with a minimum of one year Human service experience. Human service work may be met by employment and/or volunteer activities. Each applicant is re-



quested to complete a personal data information document, which will assist in the evaluation of their suitability for the program.

Consideration may be extended to other applicants under Mature Applicant regulations. (See p. 62.)

The number of student spaces in the School is limited; therefore, it may not be possible to grant admission to all applicants who meet the foregoing requirements.

Students who meet the Faculty of Social Sciences Honours continuation standards will be considered for transfer into the Second year of the B.S.W. program when spaces are available.

Students who have completed an undergraduate degree are normally admitted into the program with Third-year standing. Students with Third-year standing are eligible to take Social Work 52.300.

## Residence Requirements

Students transferring from other institutions with advanced standing in Social Work must complete a minimum of 7.5 credits in the School of Social Work chosen from the core courses in years 3 and 4, and to include Social Work 52.460.

## Equity Admissions

In the context of the admissions policy of Carleton University, the School of Social Work has an equity admissions policy that applies to candidates from groups that have been disadvantaged in respect to access to many social institutions in Canadian society. Educational equity applies to, but is not limited to, persons of aboriginal and racial, cultural, and/or ethnic minority origin; persons with disabilities; lesbian, gay and bisexual persons; and persons disadvantaged by their gender or economic position.

All students are required to meet the School of Social Work continuation standards and graduation requirements.

## Work Experience and Credit for Field Practice I (52.360)

On admission to the B.S.W. program, students who have four or more years of human service may apply to the B.S.W. Field Coordinator for waiver of the requirement for Social Work 52.360. If successful, they will be granted 1.0 elective credit in Social Work and will be required to take 1.0 additional elective credit in Social Work in lieu of Social Work 52.360. Applications must be received by July 1st of each year.

## Challenge for Credit

The School of Social Work accepts challenge for credit on elective courses in the B.S.W. program (except for 52.309★, 52.429★, 52.490★ and 52.492★). Challenge for credit is not accepted for required B.S.W. courses. (See p. 46, Challenge for Credit.)

## Graduate Program

The School of Social Work offers studies leading to the degree of Master of Social Work (M.S.W.). For details of this program consult the School and the Calendar of the Faculty of Graduate Studies and Research.

## Honours Program

Candidates whose first degree will be the Bachelor of Social Work take a total of 20.0 credits, a minimum of 9.5 Social Work credits and a minimum of 8.0 credits taken from outside the School of Social Work.

The School requirements for this degree are:

1. Social Work 52.100; 52.200, 52.210★; 52.310★, 52.320★, 52.321★; and 52.420★;
2. Social Work 52.360 (2.0 credits), 52.460 (2.0 credits) or 52.461 and 52.462;
3. Social work options, either 52.498 or two 0.5 credit courses in Social Work to be completed at the 400-level or higher;
4. a minimum of 8.0 credits outside the School of Social Work to include 1.0 credit in Psychology, and 1.0 credit in Sociology;
5. 1.0 credit of research is required. Social Work 52.250 is recommended. 1.0 credit in another approved research course may be substituted.
6. 1.5 additional credits may be either Social Work options or electives outside the School;

Candidates for the B.S.W. who enter the program with Third-year Honours standing may be exempted from Social Work 52.100 and 52.200 only. However, they must normally obtain credit for Social Work 52.300 and all other required Social Work courses listed above.

Continuation of the B.S.W. Honours program requires that a student meet the relevant Faculty of Public Affairs and Management regulations.

Graduation from the B.S.W. Honours program requires a GPA of 6.5 or better over all graded Social Work courses counted towards the degree.

Students are strongly advised to consult with their faculty adviser and the Supervisor of Undergraduate Studies regularly throughout their degree studies to ensure that they are observing School and University requirements.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Social Work 52.100

### Introduction to Social Work and Social Welfare

Social work practice, principles and knowledge base, current social problems and related fields of practice. Analysis of the relationship between social welfare and Canadian society, and the interrelationship among social work practice, societal change, social problems and social programs.

Lecture three hours a week.

Social Work 52.200

### Structural Analysis and Social Work

Establishes framework for the utilization of social science theory in social work practice. Contributions from psychology, social, political and economic theory in contexts of race, gender and class.

Prerequisites: Honours standing in the B.S.W. program and Social Work 52.100; or permission of the School.

Lecture three hours a week.

Social Work 52.202★

### Social Control and Deviance in Social Work

Theories of deviance and the structural contexts of deviant labeling and social control are explored in the context of social work practice. Students explore the implications of stigma in their lives and in the lives of those they serve.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School of Social Work.

Lecture three hours a week.

Social Work 52.203★

### Drugs in Society: Theory, Policy and Practice

An examination of the extent and nature of alcohol and other drug use, theoretical explanations of drug dependence, history of drug policy development and current federal and provincial drug strategies. Strategies for social work practice are outlined.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School of Social Work.

Lecture three hours a week.



**Social Work 52.204 ★****Human Sexuality**

Psychosocial and political issues surrounding human sexuality. The influence of culture; the range of individual differences in sexual and reproductive attitudes, values and behaviour; concerns of various sexually oppressed groups; sexual values and norms and social policy affecting sexual behaviour; implications for social work practice.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.210 ★****The Political Economy of Social Welfare**

History and theories of welfare. Contemporary issues such as the nature of the labour market, the family, the voluntary sector, and the state as the institutions through which welfare is provided in contemporary society.

Prerequisites: Honours standing in the B.S.W. program and Social Work 52.100; or permission of the School.

Lecture three hours a week.

**Social Work 52.211 ★****Poverty and Social Policy**

Studies of poverty and the distribution of income and wealth in Canada; origins and persistence of inequality of income and wealth; social policies and poverty.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.212 ★****Housing Policy**

Introduction to modes of analysis of housing and policy; current Canadian housing programs and policies; contemporary issues in policy analysis.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.221 ★****Working with Children and Youth**

Preventative and protective social work intervention with children and youth. Problems of child neglect, abuse and violence in the context of family, organizational mandate and social political contexts. Programs and services for children and youth.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.250****Research Methods in Social Work**

A range of research methods designs, including quantitative and qualitative. Alternative paradigms include: participatory, feminist, community based.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lectures three hours a week.

**Social Work 52.300****Foundations of Structural Analysis, Social Welfare and Social Work**

Social work, social welfare policy and social services in Canada. Interactions between personal and social problems, political and state organization, households, and the economy.

Precludes additional credit for Social Work 52.100, and 52.200.

Prerequisites: Third-year Honours standing upon admission to the B.S.W. and permission of the School.

Lecture three hours a week.

**Social Work 52.309 ★****Special Topics in Social Work**

Theory, policy or direct practice that is not ordinarily treated in the regular course program. Choice of topics varies from year to year and is announced well in advance.

Prerequisite: Third-year Honours standing; Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.310 ★****Social Administration and Policy**

Administration, management, social research and planning. Theory and practice of the welfare state and social policy; structure and management of major social programs; social administration as a form of social work practice.

Prerequisite: Honours standing in the B.S.W. Program; or permission of the School.

Lecture three hours a week.

**Social Work 52.311 ★****Race and Social Policy**

Theories of racism; race analysis of social welfare issues and social policy; and racism in Canadian society and specifically in the welfare state; racism in the history of Canadian welfare state.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.319 ★****Special Topics in Social Work**

Theory, policy or direct practice that is not ordinarily treated in the regular course program. Choice of topics varies from year to year and is announced in advance of registration.

Prerequisite: Third-year Honours standing; Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.320 ★****Social Work Practice in Communities and Organizations**

Major theories and practices pertaining to work in communities and human service organizations. Society's contribution to client problems and the impact of agency structures on services. Social change theories and methods for social work practitioners.

Prerequisites: Honours standing in the B.S.W. program; Social Work 52.100, 52.200, and 52.210★; or permission of the School.

Social Work 52.300 and 52.360 are normally taken concurrently.

Lecture three hours a week.

**Social Work 52.321 ★****Social Work Practice: Individuals, Families and Groups**

Development of practice competency in work with individuals, families and groups. Integration of interpersonal and analytic skills in learning effective strategies within a structural framework. Influence of class, race and gender in shaping personal and social well-being.

Prerequisites: Honours standing in the B.S.W. program, Social Work 52.100, 52.200 and 52.210★; or permission of the School.

52.300 and 52.360 are normally taken concurrently.

Lecture three hours a week.

**Social Work 52.322 ★****Practice Skills in Social Work**

Practice of specific analytical and intervention skills needed for structural social work.

Precludes additional credit for Social Work 52.222★.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.324 ★****Models of Practice with Individuals and Families**

Contemporary models of social work practice. The strengths and limitations of each model, as well as issues, questions and problems relating to practice.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.



**Social Work 52.325 ★**

**Strategies of Community Change**

Models and methods of grass-roots organizing for social change. Studying and working with community groups, students learn strategic planning, organizing, and evaluation skills.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.351 ★**

**Statistics for Social Workers**

Concepts and applications of descriptive and inferential statistics relevant to the problems encountered by social workers and other human service practitioners. Selection and utilization of statistical methods in policy making and program development.

Prerequisites: Social Work 52.100; or 52.300; and 52.250; or permission of the School.

Lecture three hours a week.

**Social Work 52.352 ★**

**Qualitative Research Methods in Social Work**

Introduction to qualitative research. How to gather data that exists in terms of lived experience thickly embedded in the historical, interactional, emotional and relational worlds of everyday life. Draws on strategies from feminist research, participatory and social action research, phenomenological research and makes application to social work practice.

Prerequisites: Social Work 52.100; or 52.300, and 52.250 or equivalent; or permission of the School of Social Work.

Lecture three hours a week.

**Social Work 52.360 (2.0 credits)**

**Field Practice I**

Focus on integrating theory and practice in a community setting supervised by a field supervisor. Monthly seminar included. Graded as *Sat/Uns*.

Prerequisites: Honours standing in the B.S.W. and concurrent enrolment in Social Work 52.320★ or 52.321★ in the Fall term and 52.320★ or 52.321★ in the Winter term, and permission of the School.

364 hours of field work over two terms.

**Social Work 52.412 ★**

**Aboriginal Peoples and Social Policy**

Social welfare issues from an Aboriginal perspective (Canadian, international), including child welfare, racism, justice, violence against women and children, substance abuse. Policy issues within a historical and contemporary social, political and economic context. Implications of self-determination for Aboriginal social policy and programs.

Precludes additional credit for Social Work 52.312★.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.413 ★**

**Practice and Policy in Immigration**

Canadian immigration policies and practices. The historical context of immigration policies; direct practice with immigrants and refugees; settlement and integration issues; immigrants and refugee women; intergenerational family relations; resources and community organizing.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.414 ★**

**International Themes in Social Work and Social Welfare**

Social welfare policy development with a focus on the Third World. Social policies and practices are examined in relation to the needs of the people and the problems inherent in North American models.

Precludes additional credit for Social Work 52.314★.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the

School.

Lecture three hours a week.

**Social Work 52.420 ★**

**Honours Integrative Seminar**

Designed to help students to arrive at a synthesis of theory and practice, and to develop skills of critical self evaluation.

Prerequisites: Fourth-year Honours standing in the B.S.W. program; Social Work 52.210★, 52.310★, 52.320★, 52.321★, 52.360 and 52.460, or 52.461 and 52.462.

Lecture three hours a week.

**Social Work 52.422 ★**

**AIDS: Policy, Programs and Practice**

Personal, social and political aspects of Acquired Immune Deficiency Syndrome. Knowledge, skills and values important for social workers in co-ordinating health and social services, program development and political analysis and working in partnership with people living with AIDS.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.423 ★**

**Social Work Practice from an Aboriginal Perspective**

Cultural identity of the Original Peoples of Canada, their traditional values, cultural-based behaviour and the effects on them of changing times and relations. Emphasis on culture-specific skills and approaches. Role of the political, legal, and constitutional status of Canadian Aboriginal Peoples.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School of Social Work.

Lecture three hours a week.

**Social Work 52.424 ★**

**Social Work and Aging**

Social perspectives on aging with focus on models of practice that contribute to the independence of elderly people. Social programs and policies, such as social insurance, social services, housing, public health and health care. Social, psychological and political issues related to independence in later life.

Prerequisite: Third-year Honours standing, Social Work 52.100, or 52.300 (which may be taken concurrently); or permission of the School of Social Work.

Lecture three hours a week.

**Social Work 52.426 ★**

**Feminist Counselling**

Examines theory, practice and literature. Commonalities arising from sexism, racism, class oppression, heterosexism, disability, ageism, etc.

Prerequisite: Social Work 52.321★; or permission of the School of Social Work.

Lecture three hours a week.

**Social Work 52.429 ★**

**Special Topics in Social Work**

Theory, policy or direct practice that is not ordinarily treated in the regular course program. Choice of topics varies from year to year and is announced in advance of registration.

Prerequisite: Third-year Honours standing; Social Work 52.100; or 52.300 (which may be taken concurrently); or permission of the School.

Lecture three hours a week.

**Social Work 52.430 ★**

**Social Work: Persons with Disabilities**

Social work roles in regards to persons with disabilities. Structural analysis of policies and practices pertaining to such persons: cultural, historical, medical, social, political and economic. The disability rights perspective as it opposes the medical model and "ableist" ideals.

Precludes additional credit for Social Work 52.309 (when listed as Social Work with People with Disabilities).

Prerequisite: Third-year Honours standing, Social Work 52.100; or

52.300 (which may be taken concurrently); or permission of the School of Social Work.  
Lecture three hours a week.

Social Work 52.460 (2.0 credits)

**Field Practice II**

Development, application, testing and integration of knowledge, theory and skills in practice with individuals, families groups and communities, in research or in social administration and policy. Graded as *Sat/Uns*.

Prerequisites: Third-year Honours standing in the B.S.W. program; Social Work 52.210★, 52.310★, 52.320★, 52.321★, 52.360; and permission of the School.

364 hours of field work and bi-weekly seminars over two terms.

Social Work 52.461

**Field Practice II A**

Development, application, testing and integration of knowledge, theory and skills in practice with individuals, families, groups and communities, in research or social administration and policy. Graded as *Sat/Uns*.

Precludes additional credit for Social Work 52.460.

Prerequisite: Honours standing in the B.S.W. program, Social Work 52.210★, 52.310★, 52.320★, 52.321★, 52.360, and permission of the School.

Social Work 52.462

**Field Practice II B**

Development, application, testing and integration of knowledge, theory and skills in practice with individuals, families, groups and communities, in research or social administration and policy. Graded as *Sat/Uns*.

Precludes additional credit for Social Work 52.460.

Prerequisites: Honours standing in the B.S.W. program. Social Work 52.210★, 52.310★, 52.320★, 52.321★, 52.360, and 52.461; and permission of the School.

Social Work 52.471★

**Special topic in Criminal Justice and Social Policy**

Selected topic in criminal justice and social policy. Topics announced in advance. Part of the Summer School in Criminal Justice and Social Policy and offered by the Department of Law.

(Also listed as Law 51.471★ and Sociology 53.471★).

Prerequisite: Fourth-year Honours standing or permission of the School.

Social Work 52.472★

**Special topic in Criminal Justice and Social Policy**

Selected topic in criminal justice and social policy. Topics announced in advance. Part of the Summer School in Criminal Justice and Social Policy and offered by the Department of Sociology. (Also listed as Law 51.472★ and Sociology 53.472★).

Prerequisite: Fourth-year Honours standing or permission of the School.

Social Work 52.473★

**Special topic in Criminal Justice and Social Policy**

Selected topic in criminal justice and social policy. Topics announced in advance. Part of the Summer School in Criminal Justice and Social Policy and offered by the School of Social Work. (Also listed as Law 51.473★ and Sociology 53.473★).

Prerequisite: Fourth-year Honours standing or permission of the School

Social Work 52.490★

**Independent Study**

A reading or research course for students who wish to investigate a particular topic of interest. Students may take a maximum of 1.0 credit of independent study in their total program.

Prerequisite: Third- or Fourth-year standing in the B.S.W. and permission of the School.

Social Work 52.492★

**Independent Study**

A reading or research course for students who wish to investigate a particular topic of interest. Students may take a maximum of 1.0 credit of independent study in their total program.

Prerequisite: Third- or Fourth-year standing in the B.S.W. and permission of the School.

Social Work 52.498

**Honours Essay**

Research essay undertaken under the supervision of a faculty adviser. The project may take the form of an experiment, a case-study, historical research, or such other work as meets with the adviser's approval. See p. 79 for regulations.

Prerequisites: Third- or Fourth-year Honours standing in the B.S.W. and permission of the School.



# Sociology and Anthropology

## (Arts and Social Sciences)

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B742 Loeb Building  
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### Academic Administration

**Chair**, Jacques Chevalier

**Associate Chair**, Wallace Clement

**Co-ordinator of Graduate Program (Anthropology)**,  
John J. Cove

**Co-ordinator of Graduate Program (Sociology)**,  
John de Vries

**Co-ordinator of B.A. (Honours) Program (Anthropology)**,  
Derek G. Smith

**Co-ordinator of B.A. (Honours) Program (Sociology)**,  
Karen March

**Co-ordinator of B.A. Program**, Brian Given

**Co-ordinator of Concentration in Population Studies**, D. McKie

### Teaching Staff

#### Professors Emeriti

**Bruce A. McFarlane**, B.A. (McGill), Ph.D. (London) • **Frank G. Vallee**, B.A. (McGill) Ph.D. (London) F.R.S.C.

#### Professors

**Pat Armstrong**, B.A. (Toronto), M.A., Ph.D. (Carleton) • **Valda J. Blundell**, B.A. (George Washington), M.A., Ph.D. (Wisconsin) • **Jacques Chevalier**, B.Ph. (Ottawa), B.A. (Carleton), Ph.D. (Edinburgh) • **Wallace Clement**, B.A. (McMaster), M.A., Ph.D. (Carleton), F.R.S.C. • **John J. Cove**, B.A., M.A. (Dalhousie), Ph.D. (British Columbia) • **Bruce A. Cox**, B.A. (Reed), M.A. (Oregon), Ph.D. (California at Berkeley) • **Bruce Curtis**, B.A. (Queen's), M.A., Ph.D. (Toronto) • **W.S. DeKeseredy**, B.A., M.A., Ph.D. (York) • **John de Vries**, B.A. (Sir George Williams), M.Sc., Ph.D. (Wisconsin) • **Dennis P. Forcese**, M.A. (Manitoba), Ph.D. (Washington at St. Louis) • **A.J. Hunt**, B.A., LL.B., Ph.D. (Leeds) • **Florence J. Kellner**, B.A. (Douglass College), M.A. Ph.D. (Rutgers) • **Charles D. Laughlin**, B.A. (San Francisco), M.A., Ph.D. (Oregon) • **T.A. Nosanchuk**, B.A. (Wayne State), M.A., Ph.D. (Chicago) • **J. Ian Prattis**, B.A. (London), B.Litt. (Oxford), Ph.D. (British Columbia) • **Stephen Richer**, M.A. (McGill), Ph.D. (Johns Hopkins) • **John Shepherd**, B.A., B.Mus. (Carleton). A.R.C.M. (Royal College of Music), D. Phil. (York, U.K.) • **Daiva K. Stasiulis**, B.A., M.A. (California at San Diego), Ph.D. (Toronto)

#### Associate Professors

**Nahla Abdo**, B.A., M.A. (Haifa), M.A., Ph.D. (Toronto) • **Hugh Armstrong**, B.A., M.A. (Carleton), Ph.D. (Montréal) • **Tullio C. Caputo**, B.A., M.A. (Windsor), Ph.D. (Michigan State) • **David Cray**, B.A. (New College), M.S., Ph.D. (Wisconsin) • **Brian J. Given**, B.A., M.A. (Carleton), Ph.D. (Alberta) • **Charles C. Gordon**, B.A. (Amherst), Ph.D. (North Carolina) • **Jared Tao Keil**, B.A. (Antioch), M.A., Ph.D. (Harvard) • **Katharine D. Kelly**, B.A., M.A., Ph.D. (Toronto) • **C. McKie**, B.A., M.A. (York), Ph.D. (Toronto) • **Rob Shields**, B.Arch., M.A. (Carleton), Ph.D. (Sussex) • **Janet Siltanen**, B.A., M.A. (Waterloo), Ph.D. (Cambridge) • **Derek G. Smith**, B.A. (British Columbia), M.A., Ph.D. (Harvard) • **Allan D. Steeves**, M.S.A. (Toronto), Ph.D. (Michigan)

#### Assistant Professors

**Barclay D. Johnson**, A.B. (Harvard), M.A., Ph.D. (California at Berkeley) • **Zhiqiu Lin**, B.A. (Heilongjiang), M.A. Ph.D. (Calgary) • **Heather Jon Maroney**, B.A. (Carleton), M.A., Ph.D. (McMaster) • **Caryll Steffens**, B.A., M.A. (Maryland), Ph.D. (North Carolina) • **Rosemary Warskett**, B.A. (Queen's), M.A., Ph.D. (Carleton)

#### Instructor

**Karen March**

#### Distinguished Research Professors

**Gertrud Neuwirth** • **Adam Podgorecki**

#### Adjunct Research Professors

**Shahid Alvi**, Consultant • **Dennis Bartels**, Sir Wilfred Grenfell College • **Jean-Philippe Chartrand**, Consultant • **Scott Clark**, Department of Justice Canada • **Bryan C. Gordon**, Archaeological Survey of Canada Canadian Museum of Civilization • **George F. MacDonald**, Canadian Museum of Civilization • **Douglas A. Norris**, Statistics Canada • **Franklin C. Pinch**, Consultant • **Bali Ram**, Statistics Canada • **Paul Reed**, Statistics Canada • **G.D. Reimer** (Consultant) • **T. John Samuel**, Consultant • **George M. Torrance**, Consultant

#### Adjunct Professors

**John Harp** • **Joseph Manyoni** • **Dennis Olsen**

## General Information

The Department of Sociology and Anthropology offers the following undergraduate programs:

- B.A. (Honours) in Anthropology
- B.A. (Honours) in Sociology
- B.A. in Sociology-Anthropology

All of these programs can be taken either as principal concentrations or in combination with other disciplines. Details of these programs are outlined below.

The several types of courses offered by the Department are indicated by the following numerical prefixes:

- 53 Sociology
- 54 Anthropology
- 56 Sociology-Anthropology

Provided they meet the requirements of the particular program for which they are registered, students may select their courses from any or all of these.

*Students may take both Sociology 53.100 and Anthropology 54.100 for credit, but only one will be included in the calculation of the Sociology/Anthropology GPA; the other will count toward the maximum credits permitted in Sociology/Anthropology. If Sociology/Anthropology 56.100 is taken, Sociology 53.100 or Anthropology 54.100 may not be taken for credit.*

## Mention: français

Students who wish to qualify for the "Mention: français" notation in Sociology/Anthropology may do so by taking the following pattern of courses in their degree program:

1. 1.0 credit in the advanced study of the French language (French 20.160).
2. 1.0 credit in French-Canadian culture and heritage (French 20.270).
3. 1.0 credit at the 200- or 300-level in Sociology and/or Anthropology taught in French at Carleton or at another University, and approved by the B.A. or B.A. (Honours) Program Co-ordinators.
4. In addition, for B.A. (Honours) Sociology or Anthropology, 1.0 credit at the 400-level in Sociology or Anthropology taught in French at Carleton or at another University, as approved by the respective B.A. (Honours) Program Co-ordinator.

## Academic Audit Report

Each student is provided with an Academic Audit Report. This important document is a computerized statement of the student's degree and disciplinary requirements, matched with the courses completed or in progress; it also includes requirements left to be completed. Students who require assistance with the interpretation of their Academic Audit Report should refer to the *Undergraduate Handbook*, published by the Department of Sociology and Anthropology, and/or consult with the appropriate departmental program Co-ordinator.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), and all Major regulations and requirements as set out below.

**Note:** Anthropology 54.203 is a prerequisite for Anthropology 54.310 (Theory and Methodology in Anthropology). Students should take note of this in planning their program. Please consult with the Department on this issue.

## B.A. (Honours) Programs

### General

B.A. (Honours) programs may be entered from the B.A. (Honours) First year in the Arts and Social Sciences or by transfer from the B.A. program if the appropriate standing has been attained. Students taking B.A. (Honours) in Sociology or Anthropology are expected to meet the general University regulations governing the degree and to fulfil certain additional requirements depending on the program selected.

### Sociology

The requirements are:

1. 9.0 credits in Sociology and/or Anthropology:
  - (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better;
  - (b) *either* Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended);
  - (c) Sociology-Anthropology 56.205 and Sociology 53.406 (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406);
  - (d) Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year);
  - (e) 2.0 credits in Sociology and/or Anthropology at the 400- or 500-level;
  - (f) 2.0 additional credits beyond the 100-level within the Department.
2. 3.0 credits in another discipline chosen in consultation with the Co-ordinator of the B.A. (Honours) program in Sociology.
3. A maximum of 12.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. (Honours) in Sociology.
4. Students entering Fourth year must have and maintain a GPA of 6.5 or better in their Major; prior to that, a GPA of 6.0 or better in the Major discipline is required.
5. A total of 20.0 credits beyond Qualifying-University year is required.

It is recommended that students take a course (or courses) involving formal reasoning (e.g., Mathematics 69.109★ or 69.119★, or Philosophy 32.201★) during their first two years.

Students are strongly advised to consult the Co-ordinator of Honours (Sociology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

**Note:** Beginning with the 1997-98 academic year, Sociology 53.495 (Honours Practicum) is no longer offered as part of the B.A. (Honours) Program, and is also no longer offered as an option.

### Anthropology

The requirements are:

1. 9.0 credits in Anthropology and/or Sociology:
  - (a) one of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 with a grade of C+ or better;
  - (b) Anthropology 54.203;
  - (c) Anthropology 54.310, 54.410 and 54.495;
  - (d) 1.0 credit in Anthropology and/or Sociology at the 400- or 500-level;
  - (e) 3.0 additional credits beyond the 100-level within the Department.
2. A maximum of 12.0 credits in Anthropology and/or Sociology may be counted toward the degree of B.A. (Honours) in Anthropology.
3. Students entering Fourth year must have and maintain a GPA of 6.5 or better in their Major; prior to that, a GPA of 6.0 or better in the Major discipline is required.
4. A total of 20.0 credits beyond Qualifying-University year is required.



Students are strongly advised to consult the Co-ordinator of Honours (Anthropology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

## **B.A. (Honours) in Sociology with a Concentration in Population Studies**

The concentration in Population Studies provides an opportunity for focused study on the growth and characteristics of human populations. This concentration includes formal demography, social demography, and applied population studies. The courses enable the student to be exposed to a variety of topics and approaches one needs to master the field of demographic analysis. Students take these courses in the area of population studies while completing an Honours program in the discipline of Sociology.

### **Admission to the Concentration**

This is a limited enrolment concentration.

Students are admitted to the program at the end of their Third year of study, on the basis of their performance in courses taken up to that time, and on the recommendation of the Program Co-ordinator.

Carleton students applying for the concentration must do so through application to the Department of Sociology and Anthropology office no later than March 31, to be considered for a space in the concentration during their final year of study. Students from other institutions should consult the admissions section of this Calendar for deadlines and procedures.

### **Graduation Regulations**

In order to graduate, students must fulfill all University graduation regulations (see p. 49) and all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to all departmental regulations and requirements as set out below.

### **Program Requirements**

The requirements of a B.A. (Honours) degree in Sociology with a Concentration in Population Studies are:

1. Sociology 53.100, Anthropology 54.100, or Sociology-Anthropology 56.100 with a grade of C+ or better (1.0 credit). Sociology 53.100 is strongly recommended.
2. Sociology 53.203 (1.0 credit).
3. Sociology 53.370; or alternatively Mathematics 69.257★ and Mathematics 69.357★ (1.0 credit).
4. Sociology-Anthropology 56.205 (1.0 credit).
5. Sociology 53.406 (1.0 credit).
6. Sociology 53.400★ and a 0.5 additional credit in Sociology and/or Anthropology at the 400- or 500-level (1.0 credit).
7. Sociology 53.493 (1.0 credit). The subject of the research project undertaken must be in the area of Population Studies.
8. Sociology 53.251★ (0.5 credit).
9. Sociology-Anthropology 56.220 (1.0 credit).
10. 1.5 additional credits in Sociology and/or Anthropology at the 200- or 300-level. The following courses are recommended: Sociology-Anthropology 56.235, 56.241, Sociology 53.247, 53.252★, Sociology-Anthropology 56.253★, Anthropology 54.319★, Sociology-Anthropology 56.320 and Anthropology 54.331★.
11. Sociology 53.351★.
12. 3.0 credits in another discipline chosen in consultation with the Co-ordinator of the B.A. (Honours) program in Sociology and the Co-ordinator for Population Studies.

Students must maintain a GPA of 6.5 or better in requirements 1 through 11 listed above, in order to remain in, and graduate with, the Concentration in Population Studies. A maximum of 12.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. Honours in Sociology with Concentration in Population Studies.

### **Field Placement**

Students are required to complete Sociology 53.400★ with an assignment at Statistics Canada or other agency as part of their concentration requirements. Students should contact the Placement Supervisor to complete arrangements for their placements during the first week of classes in September upon entrance to Fourth year.

Students are strongly advised to consult the Sociology Honours Co-ordinator and the Co-ordinator for Population Studies regularly through their degree studies to ensure that they are observing departmental, concentration, and University requirements.

## **Combined B.A. (Honours) in Sociology**

Students are strongly advised to consult the Co-ordinator of Honours (Sociology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

The general requirements for Combined B.A. (Honours) in Sociology are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended).
3. Sociology-Anthropology 56.205 or Sociology 53.406; (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).
4. Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year).
5. 2.0 credits in Sociology and/or Anthropology at the 400-or 500-level.
6. 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of Combined B.A. (Honours) in Sociology and another discipline.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

It is recommended that students take a course (or courses) involving formal reasoning (e.g., Mathematics 69.109★ or 69.119★, or Philosophy 32.201★) during their first two years.

The following programs are exceptions to the foregoing requirements:

### **Combined B.A. (Honours) in Sociology and Economics**

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended), followed by Sociology 53.370 or Economics 43.220 (it is recommended that students who take Sociology 53.370 should do so in the Third year).
3. Sociology-Anthropology 56.205 or Sociology 53.406; (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).
4. 2.0 credits in Sociology and/or Anthropology at the 400-or 500-level.



5. 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of Combined B.A. (Honours) in Economics and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

**Note:** Consult the Department of Economics. (See p. 227.)

### **Combined B.A. (Honours) in Sociology and Geography**

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended).

3. Sociology-Anthropology 56.205 or Sociology 53.406; (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).

4. Sociology 53.370 (if Geography 45.498 or 45.499 are taken, 1.0 optional Sociology and/or Anthropology credit beyond the 100-level can be substituted for Sociology 53.370; students who take Sociology 53.370 should do so in the Third year).

5. 2.0 credits in Sociology and/or Anthropology at the 400- or 500-level.

6. 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level;

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of Combined B.A. (Honours) in Geography and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

**Note:** Consult the Department of Geography. (See p. 259.)

### **Combined B.A. (Honours) in Sociology and Journalism**

Students who combine Honours programs in Sociology and Journalism and who meet graduation requirements will graduate with the degree of Bachelor of Journalism unless they apply for the Bachelor of Arts. The requirements in the Sociology component of the programs are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended).

**Note:** Mass Communication 27.201 can be substituted for Sociology 53.203 or Anthropology 54.203.

3. Sociology-Anthropology 56.205 or Sociology 53.406; (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).

4. Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year).

5. 2.0 credits in Sociology and/or Anthropology at the 400- or 500-level.

6. 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level (not including Sociology-Anthropology 56.211, if taken before 1994-95).

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degrees of Combined B.A. (Honours) in Journalism and Sociology or B.J. (with Sociology).

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

**Note:** Students are advised to consult the entry on Combined Honours in the Journalism section of this Calendar (see p. 302).

### **Combined B.A. (Honours) in Sociology and Mass Communication**

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended).

**Note:** Mass Communication 27.201 can be substituted for Sociology 53.203 or Anthropology 54.203.

3. Sociology-Anthropology 56.205 or Sociology 53.406; (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).

4. Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year).

5. 2.0 credits in Sociology and/or Anthropology at the 400- or 500-level.

6. 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level (not including Sociology-Anthropology 56.211 or 56.311 (if taken before 1994-95), 56.430★, 56.431 and 56.432★).

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of Combined B.A. (Honours) in Mass Communication and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

**Note:** Consult Mass Communication. (See p. 326.)

### **Combined B.A. (Honours) in Sociology and Political Science**

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. One of the following methods sequences:

(a) in the Second year, Political Science 47.270; in the Third year, Sociology 53.370; or

(b) in the Second year, Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended); in the Third year, Political Science 47.471★ and 47.472★ (students should note that Political Science 47.471★ and 47.472★ may not be offered every year).

3. Sociology-Anthropology 56.205 or Sociology 53.406 (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).

4. 2.0 credits in Sociology and/or Anthropology at the 400- or 500-level.

5. 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of Combined B.A. (Honours) in Political Science and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

**Note:** Consult the Department of Political Science. (See p. 377.)



## Combined B.A. (Honours) in Sociology and Psychology

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended). **Note:** Students who take Psychology 49.200 may substitute 1.0 optional Sociology and/or Anthropology credit beyond the 100-level for Sociology 53.203 or Anthropology 54.203.
3. Sociology-Anthropology 56.205 or Sociology 53.406; (students should note that Sociology-Anthropology 56.205 (or 56.305) is a prerequisite for Sociology 53.406).
4. 2.0 credits in Sociology and/or Anthropology at the 400-or 500-level.
5. Sociology 53.370 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level. If the Honours Thesis or Essay is written in Psychology, 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of Combined B.A. (Honours) in Psychology and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

**Note:** Consult the Department of Psychology. (See p. 388.)

## Combined B.A. (Honours) in Anthropology

Students intending to enter a Combined B.A. (Honours) program combining Anthropology with another discipline should take one of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 and the introductory course in the other discipline in their First year. A minimum of 6.0 credits in Anthropology and/or Sociology is required, but not more than 9.0 credits in Anthropology and/or Sociology may be counted toward the degree of Combined B.A. (Honours) in Anthropology and another discipline.

Students are strongly advised to consult the Co-ordinator of Honours (Anthropology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

The general requirements for Combined B.A. (Honours) in Anthropology are:

1. One of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Anthropology 54.203.
3. Anthropology 54.310.
4. 1.0 credit in Anthropology and/or Sociology at the 400-or 500-level.
5. (a) If the Honours Practicum is taken in Anthropology, Anthropology 54.410 and 54.495;  
(b) If the Honours Essay is written in the other discipline, 2.0 additional credits in Anthropology and/or Sociology beyond the 100-level.

Normally, Honours students will be expected to undertake an Honours Essay in one of the disciplines. In those cases where the second discipline does not require an Honours Essay, alternative arrangements may be considered by the Co-ordinator of Honours (Anthropology).

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

## B.A. Program

### B.A. Program in Sociology-Anthropology

1. Students in the B.A. program in Sociology-Anthropology must successfully complete 6.0 credits in the sociology-anthropology field:

- (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C- or better;
- (b) *either* Sociology 53.203 or Anthropology 54.203;
- (c) *either* Sociology-Anthropology 56.205 or Anthropology 54.310;
- (d) 1.0 further credit in Sociology and/or Anthropology above the 200-level;
- (e) 2.0 additional credits beyond the 100-level in Sociology and/or Anthropology.

2. Students may not count more than 9.0 credits in Sociology and/or Anthropology toward a B.A. degree.

3. Final year students with the required standing may be given permission to take a course at the 400-level. It is also expected that some work will be taken in related disciplines in the Social Sciences.

4. Students must have a GPA of 4.0 or better in Sociology and/or Anthropology courses counting toward the degree requirements (see 1. above) in order to graduate.

5. A total of 15.0 credits beyond Qualifying-University year is required.

Students are strongly advised to consult the Co-ordinator of the B.A. program regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

### Combined B.A. Programs

1. Students combining Sociology-Anthropology with another discipline must successfully complete 4.0 credits in Sociology and/or Anthropology:

- (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C- or better;
- (b) one of Sociology 53.203, Anthropology 54.203, Sociology-Anthropology 56.205 or Anthropology 54.310. **Note:** It is recommended that B.A. and B.A. Combined Majors who take Psychology 49.200 take *either* Sociology-Anthropology 56.205 or Anthropology 54.310.
- (c) 1.0 further credit in Sociology and/or Anthropology above the 200-level;
- (d) 1.0 additional credit beyond the 100-level in Sociology and/or Anthropology.

2. Students may not count more than 7.0 credits in Sociology and/or Anthropology toward a Combined B.A. degree.

3. Final year students with the required standing may be given permission to take a course at the 400-level.

4. Students must have a GPA of 4.0 or better in Sociology and/or Anthropology courses counting toward the degree requirements (see 1. above) and in the requirements of the other Major discipline in order to graduate.

5. A total of 15.0 credits beyond Qualifying-University year is required.

Combined B.A. programs should be worked out in consultation with the departments concerned, and may include other requirements additional to those listed above.

Students are strongly advised to consult the Co-ordinator of the B.A. program regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

## Criminology and Criminal Justice

For details see p. 211.

## Minor in Sociology

Students in other disciplines may undertake a Minor consisting of 4.0 credits in Sociology.

Requirements are:

53.100;  
53.203 or 56.205;  
2.0 additional Sociology credits at the 200-level or above.

**Note:** At least 2.0 credits must be taken at Carleton.

## Minor in Anthropology

Students in the discipline may undertake a Minor consisting of 4.0 credits in Anthropology.

Requirements are:

54.100;  
54.203;  
2.0 additional credits at the 200-level or above.

**Note:** At least 2.0 credits must be taken at Carleton.

## Graduate Programs

The Department offers studies leading to the following graduate degrees: M.A. in Sociology, M.A. in Social Anthropology and Ph.D. in Sociology. For further details consult the *Calendar of the Faculty of Graduate Studies and Research*. Fourth-year Honours students may take one or more graduate seminars with the permission of the Department.

## Prerequisite

The normal prerequisite for courses taken beyond the 100-level is one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100. Otherwise, students may be admitted with permission of the Department.

## Course-Related Tutorials

Students within the Department may include among their courses one or more tutorials. Further information is available from the Undergraduate Program Co-ordinators.

Written permission from the Chair of the Department of Sociology and Anthropology is necessary before registration in these courses can take place.

## Graduate Courses

Fourth-year Honours students are encouraged to take one or more graduate seminars, which are available to them with the permission of the Department. A variety of theoretical, substantive and methodological courses are available. Specific details are contained in the 1998-99 *Faculty of Graduate Studies and Research Calendar*.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

First-Year Seminar in Sociology and Anthropology 01.141

**Multiculturalism in Canada**

See course description on p. 87.

Sociology 53.100

**Introduction to Sociology**

Introduction to the comparative study of social groups, classes and institutions. The main emphasis is on industrialized societies with special attention given to Canadian society.

Precludes additional credit for Sociology-Anthropology 56.100.

Students in any Sociology and/or Anthropology program should consult the departmental General Information section on p. 411 and the departmental Honours/Combined Honours, B.A./Combined B.A. sections on p. 412.

Lectures three hours a week.

Anthropology 54.100

**Introduction to Anthropology**

Introduction to the nature and evolution of human cultural systems and forms of adaptation from hunting and gathering to farming and stratified state formations. Attention is given to institutions such as the family, economics, politics and religion.

Precludes additional credit for Sociology-Anthropology 56.100.

Students in any Sociology and/or Anthropology program should consult the departmental General Information section on p. 411 and the departmental Honours/Combined Honours, B.A./Combined B.A. sections on p. 412.

Lectures three hours a week.

Sociology-Anthropology 56.100

**Principles of Comparative Social Structure: Sociology and Anthropology**

Introduction to the comparative study of human society from the parallel perspective of sociology and social anthropology. The principal focus is on continuity and change in the development of relatively simple and highly complex societies.

Precludes additional credit for Sociology 53.100 or for Anthropology 54.100.

Students in any Sociology and/or Anthropology program should consult the departmental General Information section on p. 411 and the departmental Honours/Combined Honours, B.A./Combined B.A. sections on p. 412.

Lectures three hours a week.

Sociology 53.203

**Introduction to Sociological Research**

Introduction to general issues in sociological research. Topics include the logic of research, problems of research design, fundamental techniques of data collection in sociology and problems in the ethics of research. Students are introduced to both qualitative and quantitative research methods.

Precludes additional credit for Anthropology 54.203.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and workshop three hours a week.

Anthropology 54.203

**Introduction to Anthropological Research**

Introduction to general theoretical and methodological issues in anthropological research. Topics include the relation between theory and observation, problems of research design, fundamental techniques of data collection, the actual experience of fieldwork, and problems in the ethics of research.

Precludes additional credit for Sociology 53.203.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and workshop three hours a week.



## Sociology-Anthropology 56.205

**The Development of Sociological and Anthropological Thought**

Sociological and anthropological thought since the end of the eighteenth century. Various theoretical approaches within their historical, social and intellectual contexts. Connections between theoretical traditions and current theoretical debates in sociology and anthropology.

Precludes additional credit for Sociology/Anthropology 56.305.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Anthropology 54.206 ★

**Cultural Adaptations and the Environment**

Ways in which humans affect and are affected by the natural environment. Focus on simpler, non-industrial societies whose modes of subsistence are based upon hunting and gathering, horticulture, or pastoralism.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Anthropology 54.207 ★

**The Anthropology of Conquest**

What happens to non-Western societies in contact with colonial or industrial nation-states. Specific topics include forced labour, acculturation and ethnocentrism, wars of extermination, treaty-making and land policies, revitalization movements and other aboriginal responses to conquest.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.210

**Social Psychology**

Relationship between the individual and the social system. Emphasis on integrating individual and social approaches. Topics include attitudes, cognition, motivations, group processes such as socialization, symbolic interaction, coercion, conformity, leadership, cohesion.

Precludes additional credit for Psychology 49.210 ★.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, introductory Psychology, or permission of the Department.

Lectures three hours a week.

## Sociology-Anthropology 56.211

**The Sociology of Media Studies**

Topics in the area of media studies and their relationship to cultures and social structures will be treated.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology-Anthropology 56.215 ★

**Language, Ideology and Power**

This course will examine the ways in which different social conditions determine a variety of properties of language in use. Attention will be paid in particular to the linguistic resources for expressing ideological beliefs and for maintaining and reinforcing existing power structures in different institutional and social sites. (Also listed as Linguistics 29.275 ★.)

Lectures three hours a week.

## Sociology-Anthropology 56.216 ★

**Conversational Analysis**

Methods and theory for analysing ordinary talk. Differences between language in conversation and formal spoken and written language. The relation of conversational analysis to other approaches to studying language. The connection between conversational analysis and studies of interaction. (Also listed as Linguistics 29.276 ★.)

Lectures three hours a week.

## Sociology-Anthropology 56.220

**Canadian Society**

The course focuses on the study of Canadian society as an ongoing social system. Alternative theoretical perspectives are developed and examined for the interpretation they provide of recurrent social issues. Special attention is given to persistence and change in regional, ethnic, class and sex-role differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Anthropology 54.221 ★

**Phonetics**

Recognition, description, transcription and production of speech sounds; systems of transcription; the nature of the speech-producing mechanism; the acoustics of speech sounds. (Also listed as Linguistics 29.201 ★.)

Precludes additional credit for Anthropology 54.301 ★ and Linguistics and Applied Language Studies 29.301 ★.

Prerequisite: Linguistics 29.100

Lectures three hours a week.

## Anthropology 54.223 ★

**Language Analysis**

Direction and practice in the analysis of grammatical material, including both morphology and syntax. Models for the description of grammatical regularities. Course work consists principally of practical exercises. (Also listed as Linguistics 29.203 ★.)

Precludes additional credit for Anthropology 54.303 ★ and Linguistics 29.303 ★.

Prerequisite: Linguistics 29.100.

Lectures three hours a week.

## Anthropology 54.225

**Prehistoric Anthropology, Cultural and Biological Evolution of Humans**

An examination, from an evolutionary point of view, of the physical anthropology and archaeology of early humans, their origins, the development of technology and of complex institutions, and the nature of racial differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Anthropology 54.230

**Social Systems of Non-Western Societies**

Cross-cultural study of the attributes of various social systems. Focuses on current directions and debates in the study of kinship, political, economic and symbolic systems, culture change and other areas of anthropological concern.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology-Anthropology 56.235

**Ethnic Group Relations**

An anthropological and sociological study of minority groups and of ethnic and "race" relations in multi-cultural societies. The course focuses on intergroup processes within a comparative framework.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology-Anthropology 56.241

**Kinship, Marriage and the Family**

Examination of contemporary marriage and family life with emphasis on Canadian society, historical and cross-cultural aspects of kinship and family forms, changes in marriage and parenthood and associate social policy.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.



## Sociology-Anthropology 56.243

**Religion and Society**

Cross-cultural survey of religious institutions, with attention to theories and methodologies in the study of religion. Topics include myth, totemism, cults, ritual, altered states of consciousness, and the relationship of religion to other social institutions and processes. (Also listed as Religion 34.243.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.247

**Women in Society**

Enquiry into the historical and contemporary roots of sex-role determination. A comparative analysis of the position of women in various social formations is attempted, in conjunction with an examination of various theoretical perspectives concerning women's societal role. Emphasis is on the Canadian context.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Anthropology 54.248★

**The Anthropology of Women**

Examination of male and female roles and status in relation to societal factors such as economics, decision-making, and ideology. Emphasis is on the study of women in traditional, and changing, non-Western pre-industrial societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Anthropology 54.249★

**Development, Dependency and Gender**

Examination of anthropological and feminist analyses of the changing gendered division of labour in the Third and Fourth Worlds. Emphasis on case studies that illustrate the impact of "development" or "underdevelopment" on gender roles and gender inequality.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.251★

**Introduction to Population Studies**

Introduction to the basic principles of demography. Past and present population growth, and the determinants of population growth, are examined. Interrelations among demographic, social, cultural and economic factors are investigated. Where possible, Canadian demographic material is discussed.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.252★

**Sociology of Aging and the Elderly**

Implications of population aging for Canadian social structure. Major issues, theories and research regarding aging and the elderly in contemporary society. Canada's changing age structure and the economy, the polity, social policy, the family, the composition and living conditions of the elderly.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology-Anthropology 56.253★

**Introduction to Human Ecology**

Focus on interrelationships among population, organization, environment and technology, and on the relationship between humans and the natural environment from the perspective of resource use, management and policy.

Prerequisite: One of Sociology 53.100, Anthropology 54.100,

Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.254★

**Urban Sociology**

Issues related to people and the urban environment, including the historical process of urbanization, rural-urban transition, the diffusion of urban values and life styles, contemporary urban problems, such as urban renewal, pollution and the pressures of the urban environment on social institutions.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.255★

**Sociology of Deviance**

Analysis of the relation of deviant and criminal behaviour in modern society to the functioning of social systems. A special emphasis is given to theories of causation, types of deviance, the creation and evasion of rules and social roles of deviants.

Prerequisite: Grade of C- or better in one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent.

Lectures three hours a week.

## Sociology 53.256★

**Police in Society**

Examination of the organization and activities of the police in industrialized societies. Particular attention is devoted to Canadian information, and the themes of social control, police discretion, and the relations of police to a democratic society.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.257★

**The Sociology of Work**

Study of the sociological aspects of work with particular emphasis on: the changing meaning of work; changing impact of technology; alienation; shift from primary to secondary to tertiary sectors; changing participation rate of men and women; ethnicity and work; impact of social policy; and labour resources problems in developed and developing societies.

Precludes additional credit for Sociology 53.245.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.258★

**The Sociology of Occupations and Professions**

Study of the social history of occupations; and an examination of: occupational choice; recruitment; training and careers in non-professional and professional occupations; traditional and non-traditional views of professions, semi and para professions; and the changing participation and experiences of women in traditional and non-traditional occupations.

Precludes additional credit for Sociology 53.245.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

## Sociology 53.260★

**Community**

The community is studied as a localized social system in a larger social setting. This involves analysis of demographic and ecological factors as well as a variety of community-based institutions. Special attention is given to decision-making, community planning and development.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.



**Sociology 53.271 ★****Criminology**

The study of the relationship of crime and social structure with a special emphasis on policies and programs by which society reacts to crime.

Precludes additional credit for Sociology 53.270.

Prerequisite: Grade of C- or better in one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent. Lectures three hours a week.

**Anthropology 54.275 ★****Technology, Mind and Culture**

Anthropological perspective on technology, how it evolved and how it has influenced the human experience and adaptation. Role of technology in the evolution of consciousness and culture. Precludes additional credit for Sociology-Anthropology 56.285 ★ (if taken in 1993 - Fall term 1994).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.284 ★****Language and Culture**

Study of language in anthropology. Topics include: evolution of the brain and language, communication among non-human primates, historical linguistics, hermeneutics, non-verbal communication, gender and language, language change and developmental linguistics.

Precludes additional credit for Anthropology 54.371 ★ (taken prior to 1983-84), and for Sociology-Anthropology 56.285 ★ and 56.326 ★ (taken with the same topic.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or Linguistics and Applied Language Studies 29.100, or permission of the Department.

Lectures and workshop three hours a week.

**Sociology-Anthropology 56.285 ★****Selected Topics**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

**Sociology-Anthropology 56.286 ★****Selected Topics**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

**Sociology-Anthropology 56.291 ★****Course-Related Tutorials**

See explanatory note on p. 415.

**Sociology-Anthropology 56.292 ★****Course-Related Tutorials**

See explanatory note on p. 415.

**Anthropology 54.302 ★****Phonology**

The sound-systems of languages; methods for the analysis and description of phonological structure. The course concentrates on generative theory with comparisons to other theories. (Also listed as Linguistics and Applied Language Studies 29.302★.)

Prerequisite: Linguistics and Applied Language Studies 29.201 ★ or Anthropology 54.221 ★.

**Anthropology 54.304 ★****Grammatical Theory**

Comparison of major current schools of linguistics. Theories of grammatical structure. The testing of grammatical hypotheses, grammatical structure and meaning. Course work consists principally of lectures and readings. (Also listed as Linguistics 29.304★.)

Prerequisite: Linguistics and Applied Language Studies 29.203 ★ or Anthropology 54.223 ★.

**Anthropology 54.310****Theory and Methodology in Anthropology**

Theory and methods in anthropology. Some attention to early developments in anthropological theory. Emphasis on the contemporary formulations of functionalism, exchange theory, cultural ecology, structuralism, Marxism, feminism, and critical theory.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent and Anthropology 54.203, or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.311****Sociology of Communication Studies**

Topics in the sociology of information, knowledge, communication and mass media together with the changing character of their relationship to culture and society will be discussed.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.315****Sociology of Education**

Examination of educational institutions, their interplay with one another and with other social institutions; educational opportunity; the school and university as organizations; individual and social effects of education; the sociology of learning. Comparative consideration of contemporary critiques of the education system.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.317 ★****Visual Anthropology**

Examination of the anthropological experience as reflected in film. A number of problems are considered, including selectivity, bias, the effect of the observer's presence, and problems in reconstructing past events in film.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.318 ★****Archaeology in Canada**

Archaeological practice in North America, with particular emphasis on Canada. Topics include: human settlement of the Americas; archaeological perspectives on the cultural histories of Native American peoples; the construction of Native peoples' culture histories and European contact.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.319 ★****Issues in Canadian Native Studies**

Anthropological examination of issues and policies concerning Canadian Indian, Inuit and Métis peoples. The course explores controversies surrounding social change, native rights, cultural autonomy and women's status.

Precludes additional credit for Anthropology 54.219★.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.320****French Canada and Québec Society**

Analysis of the economic, cultural and political aspects of present-day French Canada and Québec society, with special reference to the interplay of class, culture and nation. Reading knowledge of French is helpful, but not required.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.



**Sociology-Anthropology 56.325★****Selected Topics in Sociology-Anthropology**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

**Sociology-Anthropology 56.326★****Selected Topics in Sociology-Anthropology**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

**Sociology-Anthropology 56.327★****Métis People in Canada**

Study of the emergence of the Métis People in the Northwest during European colonization. Their social, political, economic and military organization; their role in the entry of the Northwest into confederation with Canada and their culture.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.331★****Kinship and Culture**

Cross-cultural study of ideas concerning procreation, incest, and social relationships; variations in descent, marriage, families, and kinship terminologies. Aspects of kinship are studied in relation to other societal institutions and ideologies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.333★****Economic Anthropology**

Varying systems of material production, the unequal distribution of wealth and the effects that decision strategies have on social relations and change in non-industrial societies. Case studies of gift exchange, slavery, kin-based economies are examined cross-culturally.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.334★****Culture and Symbols**

Anthropological methods are employed to examine symbols in all parts of the world. Topics include religious rituals, mythology, folklore, art, primitive classification, kinship and politics.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.335★****The Prehistory of Human Settlement**

Examination of how human societies utilize space. Archaeological data are used to compare the settlement patterns of hunting and gathering peoples with those of more settled village and urban dwellers.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.336★****Medical Anthropology**

Cross-cultural study of approaches, institutions and techniques of healing; cultural and biological factors in the causation, diagnosis, treatment and meaning of disease. Cross-cultural epidemiology, ritual and symbolic healing, transcultural psychiatry, ethnopharmacology, midwifery.

Precludes additional credit for Sociology-Anthropology 56.325★ (if taken in Fall 1987).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.339★****Society and Shelter**

Buildings and shelter as human and social products. Impact of the built environment on social processes; perception and cognition of the built environment; design, construction and use of buildings as social processes; development of the design professions; distribution of shelter. (Also listed as Architecture 76.423★.)

Precludes additional credit for Sociology 53.338 (if taken prior to 1984-85).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.345★****Stratification and Mobility**

Principal theoretical and empirical questions in social class and social mobility in complex societies. Bases and forms of inequality are examined with data from Canada, England, the United States, Eastern Europe, China, Japan and other societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.346★****Industrial Sociology**

Inquiry into the development, structure and prospects of industrial society and post-industrial society; the relation of industrial institutions to the rest of society; the internal organization of industrial institutions; problems of management, labour and union relations.

Precludes additional credit for Sociology 53.246★.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.347★****Power**

The principal concern of the course is the nature of power in human groups - its sources, forms and processes. Particular attention is paid to community and national elites and power structures.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.348★****Collective Behaviour and Social Movements**

Enquiry into the process of collective action as part of social change at various levels. Topics discussed include crowds, fashions, labour, political and religious movements, rebellion and revolution.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.350★****Political Behaviour**

Examination of sociological contributions to the study of political behaviour and of the relations between politics and the social structure, both in Canada and in other societies. Emphasis is placed upon political socialization, the class basis of politics, conflict, mass movements and change.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.



**Sociology 53.351 ★**

**Methods of Population Analysis**

Introduction to demographic techniques. Problems in the collection and analysis of population data, such as population censuses and vital registration. Emphasis is placed upon the application of "demographic" methods (e.g., cohort analysis) to other areas of sociological investigation.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.356 ★**

**Complex Organizations**

Large-scale organizations in industrial and post-industrial societies; their origins; the varieties of forms they may take; various sociological explanations; the relation of organizations to the structure and culture of societies; class, gender and culture within complex organizations.

Precludes additional credit for Sociology 53.355.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.358**

**Conflict and Conflict Resolution**

Comparative analysis of the structure of social and inter-cultural conflict. Methods for conflict management and resolution are examined with particular reference to mediation, bargaining and negotiation theories. Students are expected to participate in simulation exercises.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.360**

**Development and Social Change**

Inquiry into theoretical debates pertaining to underdevelopment, modernization, dependence, exploitation and world system formation. General effects of industrialism and capitalism on the contemporary history of Third World societies are emphasized.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.370**

**Research Design and Data Analysis**

Integrated approach to the problems involved in the analysis of quantitative data. Research design and procedure and statistical inference are studied. It is recommended that Sociology Honours students take this course in the Third year of study.

Precludes additional credit for Economics 43.220 and Psychology 49.300.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent and in addition, Sociology 53.203 or Anthropology 54.203 or equivalent in other departments; or permission of the Department.

Lectures and workshop four hours a week.

**Sociology 53.373 ★**

**Criminal Justice Policy**

Description of Canadian criminal justice administration, including prison, parole, probation and community treatment, with an emphasis on conflicting ideologies and the dynamics of policy-making decisions. Consideration is given to the relationship between criminal justice policy and other aspects of social change.

Note: Places in this course are limited; students formally admitted to and registered in the Criminology and Criminal Justice Concentration will be given priority.

Prerequisites: Sociology 53.255 ★, 53.271 ★ (53.270 prior to 1988-89) and Third-year standing, or permission of the Department.

Lectures three hours a week.

**Sociology 53.375 ★**

**Medical Sociology**

Social factors related to health and illness, the illness role, relationships between patients and health practitioners, and the organization of health services. Social psychology of health and illness and the structure of organizations concerned with health care.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.377 ★**

**Sociology of Welfare Institutions**

Study of the emergence and position of welfare institutions in contemporary society with special emphasis on their relationship to social change, ideological conflicts and forms of organization.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology 53.380**

**Social Policy**

Study of social policy in relation to social change and issues in Canadian society. This involves the policy orientation and role of the social sciences, especially sociology, in assessing the socio-cultural background, the processes and the consequences of social policy. Contemporary Canadian issues are considered as case studies in social policy.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 and at least one additional 200- or 300-level credit in Sociology, or equivalent courses in related disciplines, or permission of the Department.

Lectures three hours a week.

**Sociology 53.381 ★**

**Sociology of Law**

Development of law in the contexts of modernity, the West and capitalism. Writings on law by Durkheim, Weber and Marx; their influence on the development of the sociology of law. (Also listed as Law 51.316 ★.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Anthropology 54.382 ★**

**Anthropology and Science Fiction**

Examination of anthropological issues through the medium of science fiction. Topics include: language and culture, gender and identity, the evolution of brain and consciousness, religions and symbolic systems, the exploration of space, the future of human societies.

Precludes additional credit for Sociology-Anthropology 56.285 ★ (if taken with the topic Anthropology through Science Fiction).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.383 ★**

**The Anthropology of Art I**

Anthropological study of art in small-scale, non-industrialized societies and the art of colonized tribal peoples. Economic, religious, political, psychological and symbolic roles of art in social processes, and the methods used to study such processes.

Precludes additional credit for Sociology-Anthropology 56.285 ★ or 56.325 ★ (if taken with the same topic).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100, or an introductory course in Art History, or permission of the Department.

Lectures three hours a week.



**Sociology-Anthropology 56.384★****The Anthropology of Art II**

This course applies anthropological methods and theories to the analysis of the art of selected non-Western and Fourth World societies. Case materials are drawn from selected societies.

Precludes additional credit for Sociology-Anthropology 56.286★ or 56.326★ (if taken with the same topic).

Prerequisite: Sociology-Anthropology 56.285★ or 56.325★ or 56.383★ or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.385★****Introduction to Cultural Studies**

Research and theory in the interdisciplinary area of Cultural Studies. Contemporary cultural change in the advanced industrialized societies and its impact on everyday life.

Precludes additional credit for 56.325★ (if taken with the topic "Culture Studies: An Introduction" in 1991-92 and 1992-93).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department. Third-year standing is recommended.

Lectures three hours a week.

**Sociology 53.386★****Field Placement: Criminology and Criminal Justice Concentration**

Experience in an agency setting, which provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice.

Prerequisite: Open only to those students formally admitted to and registered in the Criminology and Criminal Justice Concentration.

**Sociology 53.388★****Selected Issues in Criminal Justice**

This course focuses on conflicting goals among components of the criminal justice system, the theory and practice of correctional institutions and their alternatives, and offenders' rights.

Note: Places in this course are limited; students formally admitted to and registered in the Criminology and Criminal Justice Concentration will be given priority.

Prerequisites: Sociology 53.255★, 53.271★ (53.270 prior to 1988-89) and Third-year standing, or permission of the Department.

Lectures three hours a week.

**Sociology-Anthropology 56.391★****Course-Related Tutorials**

See explanatory note on p. 415.

**Sociology-Anthropology 56.392★****Course-Related Tutorials**

See explanatory note on p. 415.

**Sociology 53.400★****Field Placement: Research and Analysis**

Research experience in a professional research setting. Students spend up to one day a week in a research organization, and prepare an assessment of their placement. Enrolment limited. Consult the Honours Sociology Co-ordinator.

Prerequisites: Fourth-year Honours Sociology standing, Sociology 53.370, and permission of the Department.

**Anthropology 54.400★****Field Placement in Anthropology**

Students spend up to one day a week participating in a research organization, and prepare a report on their placement experience. Consult the Honours Anthropology Co-ordinator.

Prerequisites: Fourth-year Honours Anthropology standing and permission of the Department.

**Sociology 53.403★****Workshop in Advanced Research Design**

Research-oriented course that allows students to develop advanced research design skills in qualitative and quantitative techniques. Topics to be covered include philosophy of science, the nature of evidence, strategies of research design and data collection.

Prerequisites: Fourth-year Honours standing and Sociology

53.203, or permission of the Department.

Seminar three hours a week.

**Sociology 53.404★****Applied Quantitative Data Analysis**

The course examines advanced quantitative methods of data analysis, with a focus on the development and application of technical skills. Topics to be examined may include data processing, accessing public information systems, multivariate analysis, and advanced regression techniques.

Prerequisites: Fourth-year Honours standing and Sociology 53.370, or permission of the Department.

Seminar three hours a week.

**Sociology 53.406****Contemporary Theoretical Sociology**

Analysis of sociological theories since the mid-twentieth century such as structuralist, phenomenology and discourse theories, as well as the contributions of modern Marxist and feminist approaches.

Precludes additional credit for Sociology 53.306.

Prerequisites: Fourth-year Honours standing in Sociology, and Sociology-Anthropology 56.205, (or 56.305), or permission of the Department.

Lectures three hours a week.

**Anthropology 54.410****The Ethnographic Enterprise**

Examination of the premises underlying particular cases of empirical work in anthropology. The value of various anthropological paradigms for the solution of standard ethnographic problems.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.424★****Studies in the Design Professions**

Architecture and industrial design, engineering, interior design and planning. Role in culture and society; education, career and work; comparisons to traditional professions and other art and design occupations; structure of knowledge; nature of design practice. (Also listed as Architecture 76.424★.)

Prerequisite: For Sociology 53.424★: Fourth-year standing in Sociology or permission of the Department. For Architecture 76.424★: Third-year standing in the B.Arch. program, or Fourth-year standing in Sociology or the School for Studies in Art and Culture (in the combined Architecture/Art History program); or permission of the School of Architecture.

Seminar three hours a week.

**Sociology-Anthropology 56.430★****Communication Policy: Theory and Foundations**

Examination of theoretical perspectives on the role of the State in the production and legitimation of communication and cultural policies, particularly in the context of modern Canadian society. (Also listed as Mass Communication 27.430★.)

Precludes additional credit for Sociology-Anthropology 56.431 or Mass Communication 27.431, and Sociology-Anthropology 56.411 or Mass Communication 27.411 (if taken prior to 1986-87).

Prerequisites: Fourth-year Honours standing and Sociology-Anthropology 56.311 or Mass Communication 27.311, or permission of the Department.

Seminar three hours a week.

**Sociology-Anthropology 56.432★****Communication Policy: Institutions and Practices**

This course examines concrete examples of selected policy practices in the communication and cultural policy field and relates them to the institutions, agencies, actors, and social interests shaping the policy formation process in Canada. (Also listed as Mass Communication 27.432★.)

Precludes additional credit for Sociology-Anthropology 56.431 or Mass Communication 27.431, and Sociology-Anthropology 56.411 or Mass Communication 27.411 (if taken prior to 1986-87).

Prerequisites: Fourth-year Honours standing and Sociology-Anthropology 56.430★ or Mass Communication 27.430★, or permission of the Department.

Seminar three hours a week.



**Sociology 53.433★**

**Law in Advanced Capitalist Society**

The changing role and function of law in modern society with particular reference to advanced capitalist societies. Topics include the welfare state and the use of regulatory law; juridification and legalisation; counter-trends, deregulation, informalism, legal pluralism. (Also listed as Law 51.417★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.434★**

**Sociology of Law and Morals**

Relations between law and morals in social and historical perspective. Mores; types of law; legitimacy; social operation and effectiveness of law; relation between power and law or morality; human rights; totalitarian law. Theorists include Durkheim, Petrazzky, Weber, Pound, Aubert, Habermas, and Luhmann.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.440★**

**Environment, Ideology and Social Policy**

Development of North American environmental movement. Topics may include: public perceptions of the environment, environmental protection policy, sustainable development, alternative energy sources, environmental impact assessment, technology strategies, legal remedies to environmental problems, the "green" consumer products, community recycling programs.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.443★**

**Selected Problems in the Uses of Sociology and Social Policy Analysis**

Selected problems in the relation between sociology and the uses to which it may be put. Topics may include: social criticism, social intervention, social policy and social planning, social engineering, systems analysis and action research.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology-Anthropology 56.450★**

**Advanced Qualitative Research Methodology in Sociology and Anthropology**

Study of specific methodological topics in social research. Among the topics that may be included are: archival research, interviewing, observational techniques, content analysis, and life history analysis.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Note:** The following courses, Sociology 53.451★-56.459★, are workshops organized either around a specific research topic or around some policy or interventionist issue. The content is expected to vary from year to year reflecting the current research interests of the instructor. When a workshop is offered, a detailed description will be available. In general, specific area workshops are unlikely to be offered more than once in any two-year period.

**Sociology 53.451★**

**Workshop in Demography/Human Ecology**

Research- and/or policy-oriented seminar that uses census data or other secondary sources to examine topics in Canadian population, technological development, migration or resource use, depending on the research interests of the instructor.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.452★**

**Workshop on Work and Organizations**

Research-oriented seminar that, depending on the research interests of the instructor, may examine the occupational distribution

in Canada, ethnicity, gender and work, occupational choice, trade unions, professional organizations, the professions or bureaucracy.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.453★**

**Workshop in Criminology/Deviance**

Seminar that, depending on the research interests of the instructor, may consider crime, criminal justice, social processes relating to the implementation of criminal justice policy, or other aspects of criminality or deviance.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.454★**

**Workshop on Sociology of Education**

Research- or policy-oriented seminar that, depending on the research interests of the instructor, may examine teacher expectancy effects, student culture, barriers to equality of access or other substantive issues.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.455★**

**Workshop on Stratification and Mobility**

Research-oriented seminar that, depending on the research interests of the instructor, may examine differentiation over time or comparatively, patterns of inheritance mobility, or the effects of ethnicity, of gender and past education on the structure of inequality.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.456★**

**Workshop in Urban Sociology**

Research-oriented seminar examining aspects of the Ottawa area. These may include patterns of urban growth and change, residential and urban-rural mobility, depending on the research interests of the instructor.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.457★**

**Workshop in Social Psychology**

Research-oriented seminar that, depending on the research interests of the instructor, may focus on one or more of the following topics: attribution theory, cognitive social psychology, conformity, ethno-methodology, psychoanalysis or victimology.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology-Anthropology 56.458★**

**Workshop in Political Sociology-Anthropology**

Research-oriented seminar that, depending on the research interests of the instructor, may examine voting behaviour, political movements and parties, national and community elites, relations between society and the state, the prehistoric state, and social conflict.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology-Anthropology 56.459★**

**Workshop in Feminist Research and Analysis**

Research-oriented seminar that focuses on current issues in feminist research, depending on the research interests of the instructor.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.



**Sociology-Anthropology 56.460★****Studies in Applied Semiology**

Relationship between culture and signs, emphasizing text analysis. The scriptures, myths, folk narratives, modern literature and art, the media, pornography, children's drawings are analyzed to illustrate conflicting views on the nature of language.

Precludes additional credit for Anthropology 54.475★ (if taken with the same topic).

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology-Anthropology 56.465★****Selected Problems in the Study of Ethnic and Race Relations**

Social, political, economic and ideological relevance of ethnicity and "race" in Canada and other Western societies. Issues include ethnic inequality, aboriginal rights, racism, ethnic mobilization, position of immigrant and minority women.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Anthropology 54.470★****Workshop in North American Aboriginal Studies**

Cultural persistence, cultural or social change, contemporary conditions and struggles, the position of Indians, Inuit and Métis in Canadian society, and conceptions of aboriginality.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.471★****Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. (Also listed as Law 51.471★ and Social Work 52.471★.)

Prerequisite: Permission of the Department.

Hours to be arranged.

**Sociology 53.472★****Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. (Also listed as Law 51.472★ and Social Work 52.472★.)

Prerequisite: Permission of the Department.

Hours to be arranged.

**Sociology 53.473★****Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. (Also listed as Law 51.473★ and Social Work 52.473★.)

Prerequisite: Permission of the Department.

Hours to be arranged.

**Sociology 53.474★****Youth Culture and Juvenile Justice**

Establishment and development of the youth justice system in Canada; analysis of juvenile justice policy in relation to crime patterns and youth culture; emphasis on the federal Young Offenders Act and its consequences for the juvenile justice system.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Anthropology 54.475★****Workshop in Signs and Symbols**

Study of one or more of: psychoanalysis, structuralism, post-structuralism, post-modernism, feminism, critical theory, historical anthropology, neuroanthropology, phenomenology.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Anthropology 54.476★****Workshop in Development and Underdevelopment**

Research-oriented seminar that, depending on the interests of the instructor, may focus on one or more of the following topics: domestic economies, peasant production, forced labour, capital-

dominated markets, and theories of underdevelopment and colonialism.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

**Sociology 53.480★****Masculinity and Power**

Examination of masculinity as a social construct; of relationships between masculinity and femininity as they constitute a field of power relations; and of social and discursive practices by which masculinity is re-constituted, historically, and in contemporary times.

Precludes additional credit for Sociology 53.480★, Men's Studies, and Sociology 53.485★ (if taken with the topic Men's Studies).

Prerequisite: Fourth-year Honours or graduate standing, or permission of the Department.

Seminar three hours a week.

**Sociology 53.482★****Sexuality and Human Reproduction**

Recent feminist contributions to understanding the political economy of women's sexuality and reproduction. State and medical regulatory practices; feminist contributions to theorizing sexual subjectivity and representations of the female body.

Precludes additional credit for Sociology 53.485★ (if taken in 1989-90 and 1990-91).

Prerequisites: Fourth-year Honours standing and Sociology 53.247 or equivalent, or permission of the Department.

Seminar three hours a week.

**Sociology 53.485★****Contemporary Problems in Sociology**

Selected problems in sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

**Sociology 53.486★****Contemporary Problems in Sociology**

Selected problems in sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

**Sociology 53.491★****Tutorial in Sociology**

See explanatory note, p. 415.

**Sociology 53.492★****Tutorial in Sociology**

See explanatory note, p. 415.

**Anthropology 54.491★****Tutorial in Anthropology**

See explanatory note, p. 415.

**Anthropology 54.492★****Tutorial in Anthropology**

See explanatory note, p. 415.

**Sociology 53.493****Directed Research**

Directed studies to investigate a particular topic.

Prerequisites: Fourth-year Honours standing in Sociology and permission of the Department. Enrolment is limited to Honours students with a GPA in Sociology of 9.0 or better and a proposal approved by the Honours Committee.

**Anthropology 54.495****Honours Practicum**

At the end of their final year, Honours candidates are required to present a major research essay. Students present their essay proposals for discussion and criticism to fellow students and faculty, and report periodically upon the paper's progress. Common problems of conceptualization, research design, analysis and interpretation are taken up for consideration.

Prerequisite: Fourth-year Honours standing.



# School of Languages, Literatures and Comparative Literary Studies

## Spanish

### (Arts and Social Sciences)

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1416 Dunton Tower  
Telephone: 520-5644

#### General Information

Students currently enrolled in programs offered by the Discipline of Spanish are governed by the requirements contained in the 1997-98 *Undergraduate Calendar*.

#### Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Spanish 38.115

##### **Introductory Spanish**

A course for those with no knowledge of Spanish, designed to give the student the fundamentals of spoken and written Spanish, through oral practice, reading and laboratory work.

Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program.

Spanish 38.120 (2.0 credits)

##### **Intensive Introductory Spanish**

For students with little or no Spanish. Students can attain in one year the level normally gained in Spanish 38.115 and 38.203; those not making satisfactory progress will transfer to Spanish 38.115.

Lectures and laboratory six hours a week.

Spanish 38.203

##### **Intermediate Spanish**

A course for those with at least one year of Spanish. Grammar review, extensive reading, guided composition, laboratory work.

Prerequisite: Spanish 38.115 or equivalent.

Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program.

Spanish 38.204

##### **Intensive Intermediate Spanish**

A course for potential Majors and for those with OAC Spanish or equivalent. Review of grammar and some advanced syntax; extensive reading, discussion and composition.

Prerequisites: Spanish 38.115 or equivalent, and permission of the School. With special permission of the School, students enrolled in this course may take Spanish 38.205★ simultaneously.

Spanish 38.205★

##### **Spanish Conversation**

Conversation and discussion of current problems, supplemented by occasional written work.

Prerequisite: Spanish 38.120 or 38.203 or 38.204 or permission of the School.

Three hours a week.

Also offered in Intensive Spanish Program.

Spanish 38.206★

##### **Spanish Composition**

A course designed to consolidate the linguistic knowledge attained in Spanish 38.203 and to inculcate the elements of a good Spanish style.

Prerequisite: Spanish 38.120 or 38.203 or 38.204 or permission of the School.

Lectures and discussion three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.210★

##### **Spanish Civilization**

The cultural heritage of Spain in its social and geographical contexts.

Prerequisite: Spanish 38.120 or 38.203 or 38.204 or permission of the School.

Lectures and discussion three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.211★

##### **Spanish-American Civilization**

The cultural heritage of Spanish America in its social and geographical contexts.

Prerequisite: Spanish 38.120 or 38.203 or 38.204 or permission of the School.

Lectures and discussion three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.220 (2.0 credits)

##### **Intensive Advanced Spanish**

A course designed for potential majors who have taken 38.115 (or an equivalent introductory course), it combines the material given in 38.203, 38.205★ and 38.206★. Students not making satisfactory progress will be transferred to a different, non-intensive course at the appropriate level.

Precludes additional credit for Spanish 38.203, 38.205★, 38.206★. Lectures and laboratory seven hours a week during the Fall term, six hours a week during the Winter term.

Spanish 38.235

##### **An Introduction to Hispanic Theatre**

A study of the theory and practice of dramatic production in Spain and Spanish America together with detailed analysis and interpretative reading of representative plays. Students in the course are required to participate in the staging of a play.

Prerequisite: Spanish 38.120 or 38.203 or 38.204 or permission of the School.

Spanish 38.301★

##### **Advanced Oral Spanish**

An advanced sequel to Spanish 38.205★.

Prerequisite: Spanish 38.205★ or permission of the School.

Conversation and discussion three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.302★

##### **Advanced Spanish Composition**

An advanced sequel to Spanish 38.206★.

Prerequisite: Spanish 38.206★ or permission of the School.

Lectures and discussion three hours a week.

Also offered in Winter Program Abroad.

## Spanish 38.303 ★

**Spanish Phonetics and Phonology**

A descriptive study of the sounds and sound patterns of Spanish. Practical exercises, written and oral.

Recommended for teachers.

Prerequisites: Spanish 38.205 ★ and 38.206 ★ or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.305

**Intensive Oral Spanish**

An intensive course in Spanish conversation which, being offered only in a Spanish-speaking country, also provides an introduction to Hispanic culture. Students who satisfactorily complete this course are ineligible to enrol subsequently in Spanish 38.205 ★ or 38.301 ★.

Compulsory attendance at all classes and participation in all activities.

Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the School.

## Spanish 38.320 ★

**The Golden Age I**

A study of representative works of Spanish literature of the Renaissance and Early Baroque periods.

Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.321 ★

**The Golden Age II**

A study of representative works of Spanish literature of the Baroque period.

Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.330 ★

**Nineteenth-Century Spanish Literature**

A study of representative works of the major movements (Romanticism, *costumbrismo*, Realism and Naturalism) and authors of Spanish literature of the nineteenth century.

Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.331 ★

**Twentieth-Century Spanish Literature**

A study of representative works of Spanish literature from the Generation of 1898 on.

Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.350 ★

**Spanish-American Literature, 1500-1888**

A study of representative works of Spanish-American literature of the Colonial Period and the nineteenth century prior to Modernism.

Prerequisite: Spanish 38.211 ★ or 38.235 or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.351 ★

**Spanish-American Literature from Modernism to the Present**

A study of representative works of Spanish-American literature since 1888.

Prerequisite: Spanish 38.211 ★ or 38.235 or permission of the School.

Lectures and discussion three hours a week.

## Spanish 38.402 ★

**Theories of Literature**

Theoretical discussion of literature from about 1920 to the present. Offered by the School of Comparative Literary Studies as Theories of Literature 17.402 ★. Spanish students will register in Spanish 38.402 ★, and will use Hispanic texts for exercises of practical application.

tical application.

Prerequisite: Permission of the School.

Seminar three hours a week.

## Spanish 38.415 ★

**Medieval Spanish Literature from the Origins through 1300**

A study of major works of Spanish literature from the earliest times through the thirteenth century.

Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the School. Students will normally have taken a literature course at the 300-level before enrolling in this course.

Seminar three hours a week.

## Spanish 38.416 ★

**Medieval Spanish Literature, 1300-1500**

A study of major works of Spanish literature of the fourteenth and fifteenth centuries.

Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the School. Students will normally have taken a literature course at the 300-level before enrolling in this course.

Seminar three hours a week.

## Spanish 38.420 ★

**Cervantes**

A study of Cervantes and his age, with particular reference to *Don Quixote*.

Prerequisites: Spanish 38.320 ★ and 38.321 ★ or permission of the School.

Seminar three hours a week.

## Spanish 38.430 ★

**Modern Spanish Novel**

Analysis and interpretation of works by major Spanish novelists from the beginnings of Realism in the nineteenth century up to the Civil War in 1936.

Prerequisites: Spanish 38.330 ★ and 38.331 ★, or permission of the School.

Seminar three hours a week.

## Spanish 38.431 ★

**Contemporary Spanish Novel**

Analysis and interpretation of works by major Spanish novelists from the Civil War to the present.

Prerequisites: Spanish 38.330 ★ and 38.331 ★ or permission of the School.

Seminar three hours a week.

## Spanish 38.435 ★

**Modern Spanish Drama**

Analysis and interpretation of works by major Spanish playwrights of the nineteenth and early twentieth centuries, together with study of related dramatic theory.

Prerequisites: Spanish 38.330 ★ and 38.331 ★ or permission of the School.

Seminar three hours a week.

## Spanish 38.436 ★

**Contemporary Spanish Drama**

Analysis and interpretation of works by major Spanish playwrights from the Civil War to the present, together with study of related dramatic theory.

Prerequisites: Spanish 38.330 ★ and 38.331 ★ or permission of the School.

Seminar three hours a week.

## Spanish 38.440 ★

**Modern Spanish Poetry**

A study of Spanish poetry and poetics of the nineteenth and early twentieth centuries.

Prerequisites: Spanish 38.330 ★ and 38.331 ★ or permission of the School.

Seminar three hours a week.

## Spanish 38.441 ★

**Contemporary Spanish Poetry**

A study of Spanish poetry and poetics from the Generation of 1927 to the present.

Prerequisites: Spanish 38.330 ★ and 38.331 ★ or permission of the



## Spanish

School.

Seminar three hours a week.

Spanish 38.460 ★

### **Twentieth-Century Spanish-American Novel I**

Analysis and interpretation of works by major Spanish-American novelists of the first half of the twentieth century.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the School.

Seminar three hours a week.

Spanish 38.461 ★

### **Twentieth-Century Spanish-American Novel II**

Analysis and interpretation of works by major Spanish-American novelists of the second half of the twentieth century.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the School.

Seminar three hours a week.

Spanish 38.470 ★

### **Twentieth-Century Spanish-American Poetry I**

A study of the principal tendencies in twentieth-century Spanish-American poetry with special emphasis on the modernist poets, the post-modernist *poetisas* and the creationism of Vicente Huidobro.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the School.

Seminar three hours a week.

Spanish 38.471 ★

### **Twentieth-Century Spanish-American Poetry II**

A study of the principal tendencies in twentieth-century Spanish-American poetry, with special emphasis on the social poetry of César Vallejo, Nicolás Guillén and Pablo Neruda.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the School.

Seminar three hours a week.

Spanish 38.480 ★

### **Twentieth-Century Spanish-American Theatre I**

Analysis and interpretation of plays by major Spanish-American playwrights of the first half of the twentieth century. Theatrical forms and dramatic movements will include the sainete, the grotesco criollo, realism, the Independent Theatre, and anti-realistic experiments.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the School.

Seminar three hours a week.

Spanish 38.481 ★

### **Twentieth-Century Spanish-American Theatre II**

Analysis and interpretation of plays by major Spanish-American playwrights since 1950. Theatrical forms and dramatic movements will include Critical Realism, Epic Theatre, Expressionism, and the Theatre of the Absurd.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the School.

Seminar three hours a week.

Spanish 38.490

### **Seminar on a Special Topic**

Designed for Honours students normally in their final year, or for Graduate students.

Seminar three hours a week.

Spanish 38.491 ★

### **Seminar on a Special Topic**

Designed for Honours students normally in their final year, or for graduate students.

Prerequisites: Spanish 38.350★ and 38.351★, or permission of the School.

Seminar three hours a week.

Spanish 38.492 ★

### **Special Studies**

From time to time members of the School form small groups to study certain problems or aspects of Spanish literature in greater depth than is possible in other courses. Interested students should consult the School.

Seminar three hours a week.

## • Portuguese Course

Portuguese 38.116

### **Introductory Portuguese**

A course designed to provide the student with the fundamentals of Portuguese grammar, a basic vocabulary and speaking knowledge of Portuguese. Students who have taken courses in other Romance languages should make considerable progress.

# Systems and Computer Engineering (Engineering)

4462 Mackenzie Building  
Telephone: 520-5740  
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## Academic Administration

Chair, S.A. Mahmoud

## Teaching Staff

### Professors

**Raymond J.A. Buhr**, B.Sc. (Queen's), M.Sc. (Saskatchewan), Ph.D. (Cambridge) • **John W. Chinneck**, B.A.Sc., M.A.Sc., Ph.D. (Waterloo) P.Eng. • **David C. Coit**, M.Eng. (McGill), Ph.D. (Carleton), F.I.E.E.E., P.Eng. • **M.S. El-Tanany**, B.Sc., M.Sc. (Cairo), Ph.D. (Carleton) • **David D. Falconer**, B.A.Sc. (Toronto), Ph.D. (Massachusetts Institute of Technology), P.Eng. • **Monique Frize**, B.A.Sc. (Ottawa), M.Phil., D.I.C. (Imperial), M.B.A. (Moncton), Doctorate (Erasmus) • **Donald Gerwin**, B.S. (Carnegie-Mellon), M.S. (Case Western Reserve), Ph.D. (Carnegie-Mellon) • **R.H.M. Hafez**, B.Sc., M.Sc. (Alexandria), Ph.D. (Carleton) • **Samy A. Mahmoud**, B.Sc. (Ain Shams), M.Eng., Ph.D. (Carleton), P.Eng. • **L. Robert Morris**, B.A.Sc. (Toronto), D.I.C. (Imperial), Ph.D. (London), P.Eng. • **B. Pagurek**, B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng. • **J.S. Riordon**, B.Eng., M.Eng. (McGill), D.I.C. (Imperial), Ph.D. (London), F.E.I.C., P.Eng. • **A.U.H. Sheikh**, B.Sc. (University of Engineering and Technology, Lahore), M.Sc., Ph.D. (Birmingham), P.Eng. • **C.M. Woodside**, B.A.Sc. (Toronto), Ph.D. (Cambridge), P.Eng.

### Associate Professors

**A.J. Baiietti**, B.S. (Univ. National de Ingenieria), M.B.A., Ph.D. (Cincinnati) • **Andrzej Bieszczad**, Mgr (Institute of Informatics, Jagiellonian), M.C.S., Ph.D. (Carleton) • **John R. Callahan**, B.Sc. (Carleton), M.A., Ph.D. (Toronto) • **Rafik A. Goubran**, B.Sc., M.Sc. (Cairo), Ph.D. (Carleton), P.Eng. • **S. Majumdar**, B. Eng. (Jadavpur), M.Eng. (Politecnico Di Torino), M.Sc., Ph.D. (Saskatchewan) • **Dorina C. Petriu**, Dipl. Eng. (Institute of Timisoara, Romania), Ph.D. (Carleton) • **Jerome Roila**, B.C.S. (Carleton), M.Sc., Ph.D. (Toronto) • **H.M. Schwartz**, B.Eng. (McGill), M.Sc., Ph.D. (Massachusetts Institute of Technology)

### Assistant Professors

**M. Devetskiotis**, (Dipl.Elect.Engin.(Thessaloniki), M.Sc.,Ph.D.(North Carolina State University) • **Thomas Kunz**, Diplom-Wirtschaftsinformatiker, Dr.Ing. (Technical University of Darmstadt, Germany) • **Ioannis Lambadaris**, B.A. (Aristotelian), M.Sc. (Brown), Ph.D. (Maryland) • **Trevor Pearce**, B.Eng., M.Eng. (Carleton), Ph.D. (Queen's)

### Instructor

**Donald L. Bailey**, B.Eng., M.Eng. (Carleton)

### Adjunct Research Professors

**G.D. Boudreau**, MPR Teltech Ltd. • **A.J. Brammer**, National Research Council • **R.J.C. Buititude**, Communications Research Centre • **S.N. Crozier**, Communications Research Centre • **S. Heeralali**, Nortel • **G.M. Karam**, AT&T Bell Laboratories • **L.S. Marshall**, Bell-Northern Research • **W. Oider**, Bell-Northern Research • **R.D. Peacocke**, Nortel • **L. Strawczynski**, Nortel • **Y. Wu**, Communications Research Centre

The Departments of Electronics and Systems and Computer Engineering offer courses in Computer Systems Engineering and Electrical Engineering programs (please see p. 104, p. 105 and p. 233).

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

### Engineering 94.201 ★

#### Foundations of Computer Systems

The relationships between high-level languages (including object-oriented languages), operating systems, and computer

system architecture. Representation of data; basic computer organization: CPU and memory, instruction encoding and execution; assemblers and linkers; code generated by compilers; runtime support.

Prerequisite: Engineering 91.166 ★.

Lectures three hours a week, laboratory two hours a week.

### Engineering 94.202 ★

#### Program Design and Construction

In-depth experience in the design and construction of computer programs involving data structures and different programming paradigms. Data structures, formal specification, abstract data types, graphs, recursion, finite state machines and object-oriented programming.

Precludes additional credit for Engineering 94.302 ★.



Prerequisite: Engineering 91.166★.  
Lectures three hours a week, laboratory two hours a week.

**Engineering 94.203★**

**Introduction to Real-Time Systems**

Principles of event-driven systems. Review of computer organization. Parallel and serial interfaces, programmable timer. Input/output methods: polling, interrupts. Real-time issues: concurrency, mutual exclusion, buffering. Introduction to concurrent processes, real-time kernels.

Precludes additional credit for Engineering 94.303★.

Prerequisite: Engineering 94.201★.

Lectures three hours a week, laboratory two hours a week.

**Engineering 94.204★**

**Object-Oriented Programming Laboratory**

Principles and practice of three software development paradigms with an object-oriented programming language: developing classes from scratch, reuse of existing classes, incremental extension of frameworks. Development of expertise in designing, implementing, and testing industrial-quality, reusable code.

Prerequisite: Engineering 94.202★.

Lectures two hours a week, laboratory three hours a week.

**Engineering 94.250★**

**Introduction to Communication Theory**

Signals: energy and power signals. Fourier analysis: the Fourier Transform, transforms of basic functions, properties, complex Fourier series, line spectra of periodic functions. Baseband signals. Introduction to noise: random processes, white noise, thermal noise.

Precludes additional credit for Engineering 94.351★.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 94.301★**

**Operating Systems and Data Bases**

Operating systems and data bases treated from a common perspective. Management of CPU, processes, memory, files, and data. Implications of concurrency. Concurrent programming, including interprocess communication in distributed systems. Data models and query languages.

Precludes additional credit for Engineering 94.401★.

Prerequisites: Engineering 94.202★; or Engineering 94.203★ and 94.302★.

Lectures three hours a week.

**Engineering 94.303★**

**Real-Time Computing Systems**

Computer organization and event-driven systems: processor, memory, input/output, instruction encoding and execution. Representation of data, assembly language programming, implementing high-level language concepts. Devices: display, parallel and serial interfaces, programmable timer. Input/Output methods: polling and interrupts. Real-time issues: concurrency, mutual exclusion, buffering.

Precludes additional credit for 94.201★ and 94.203★. May not be taken for credit by students in Computer Systems Engineering.

Prerequisite: Engineering 91.166★.

Lectures three hours a week, laboratory two hours a week.

**Engineering 94.310★**

**Systems Analysis**

Creating requirements specifications prior to designing and implementing complex software systems. Software development lifecycles, role of requirements analysis; functional decomposition, dataflow modelling; database modelling, entity-relationship diagrams; finite state machines; object-oriented analysis; use cases, use case maps; project management; introduction to software design.

Prerequisite: Engineering 94.204★.

Lectures three hours a week.

**Engineering 94.320★**

**Industrial Engineering**

Techniques of operations research for decision-making in complex engineering systems. Linear programming, network models, PERT, integer programming, dynamic programming, queueing sys-

tems and inventory models. Problem-solving is emphasized.

Precludes additional credit for Business 42.230★, Economics 43.404★, or Mathematics 69.381★.

Prerequisite: Mathematics 69.104★ and 69.114★, and Engineering 91.166★.

Lectures three hours a week.

**Engineering 94.333★**

**Real-Time Concurrent Systems**

Principles and practice of a systems engineering approach to the development of software for real time, concurrent, distributed systems. Designing to achieve concurrency, performance, and robustness, using visual notations. Converting designs into programs and viewing programs in design terms. Major course project.

Prerequisites: Engineering 94.301★ or 94.401★.

Lectures two hours a week, laboratory three hours a week.

**Engineering 94.342★**

**Introduction to Communications Software**

Finite state machines and related models. Layered communication models and protocols. Modern programming tools such as C++ and JAVA in programming examples from LAN Logical Link Layer and Medium Access Control Layer Protocols, and the ISO/OSI Physical and Data Link Layer Protocols.

Lectures three hours a week, problem analysis three hours alternate weeks.

**Engineering 94.351★**

**Communication Theory**

Signals and linear systems; review of Fourier series; Fourier transforms; power spectral density and correlation; sampling theory; amplitude, frequency, and phase modulation systems; representation of narrow-band noise; noise in modulation systems; phase-locked loops; noise figure and temperature; cascaded systems.

Prerequisites: Mathematics 69.375★ and Engineering 94.260★ or 94.360★.

Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.353★**

**Communication Theory II**

Amplitude Modulation. Frequency Modulation. Performance of AM and FM in noise. Digital modulation: ASK, FSK, PSK. Optimal reception, probability of error on the AWGN channel.

Precludes additional credit for Engineering 94.351★ or 94.460★.

Prerequisite: Engineering 94.250★.

Lectures three hours a week, laboratory, three hours alternate weeks.

**Engineering 94.360★**

**Systems and Simulation**

Properties of linear systems. Linear dynamic models of engineering systems. Applications of the Laplace transform. Transfer functions. Block diagrams. Frequency and time response. System simulation with digital computers.

Precludes additional credit for Engineering 94.260★.

Prerequisites: Mathematics 69.105★ or 69.201, and Engineering 91.111★.

Lectures three hours a week, laboratory three hours a week.

**Engineering 94.361★**

**Microprocessor Systems**

Microprocessor-based system design for different microprocessor families. Microprocessors: internal organization, instruction sets, address generation, pin-outs, bus cycles, signalling waveforms. Interfacing memory and I/O devices. Interrupt structures, direct memory access. Floating point coprocessors. System bus standards. Introduction to DSPs.

Precludes additional credit for Engineering 97.461★.

Prerequisites: Engineering 97.267★ or 97.367★, and 94.203★ or 94.303★.

Lectures three hours a week, laboratory three hours alternate weeks.



**Engineering 94.395 ★****Professional Practice**

Current computer systems and electrical engineering practice and its relationship to other disciplines and society in general. Professional Engineers Act, professional ethics and responsibilities, impact of technology on society. Development of oral and written communications skills. (Also offered as Engineering 97.395 ★). Precludes additional credit for Engineering 82.495 ★ and 86.495 ★. Prerequisite: Third-year registration. Lectures three hours a week.

**Engineering 94.401 ★****Operating Systems**

Introduction to operating system principles. Structure of an operating system; management of CPU, processes, and memory; dead-lock problems, file systems. Concurrent programming. Precludes additional credit for Engineering 94.301 ★. Prerequisites: Engineering 94.202 ★ or 94.302 ★, and 94.203 ★ or 94.303 ★. Lectures three hours a week.

**Engineering 94.405 ★****Discrete Simulation and Its Applications**

Simulation as a problem solving tool. Random variate generation, general discrete simulation procedure: event table and statistical gathering. Analyses of simulation data: point and interval estimation. Confidence intervals. Overview of modelling, simulation, and problem solving using SIMSCRIPT, MODSIM, and other languages. Prerequisite: Fourth-year registration or permission of the Department. Lectures three hours a week, laboratory one hour a week.

**Engineering 94.415 ★****Engineering Management**

Introduction to engineering management: management of new products, management of manufacturing processes, management of the linkages between new products and manufacturing processes. Current theories, concepts and techniques are stressed, using a combination of readings, cases and guest speakers. Prerequisite: Fourth-year registration. Lectures three hours a week.

**Engineering 94.445 ★****Introduction to Digital Signal Processing**

Discrete time signal and system representation: time domain, z-transform, frequency domain. Sampling theorem. Digital filters: design, response, implementation, computer-aided design. Spectral analysis: the discrete Fourier transform and the FFT. Applications of digital signal processing. Prerequisite: Engineering 94.260 ★ or 94.360 ★. Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.454 ★****Distributed Network Processing**

Software aspects of distributed networks. Client-server systems. Internet and the WWW. LAN's and WAN's, routing protocols. Transportable software, JAVA applets. Use of modern software tools in communication network monitoring and analysis. Network management. Prerequisite: Engineering 94.352 ★. Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.455 ★****Automatic Control Systems I**

Review of Laplace transform techniques. Effects of feedback: frequency response, pole-zero positions. Compensation: root locus, Bode plots. State variables: formulation, solution of linear systems, examples of simple second-order non-linear systems. Discrete time systems: z-transforms. Signal reconstruction. Prerequisites: Mathematics 69.201 or 69.204 ★, and Engineering 94.260 ★ or 94.360 ★. Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.457 ★****Architecture of Computer Systems**

History of computers: evolution of concepts, influence of technology, techniques to increase performance. Detailed analysis and design of ALUs, control units, memory systems. Multiprocessor systems, pipeline and array processing. Scalable, superscalar, RISC, CISC, fault tolerant, and digital signal processing architectures. Prerequisite: Engineering 97.267 ★ or 97.367 ★. Lectures three hours a week.

**Engineering 94.460 ★****Digital Communications**

Review of probability, random variables, signal representation. Pulse code modulation, other digital waveform coding techniques. Physical layer of data communications. Baseband data transmission: Nyquist criterion, filtering, optimal receiver, probability of error. Digital modulation techniques, performance. Synchronization. Introduction to information theory. Error detection and correction. Prerequisite: Engineering 94.351 ★. Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.462 ★****Introduction to Computer Communications**

Layered protocol architectures, OSI. Physical media, physical layer interfaces, data transmission. Data-link protocols, multiplexing, polling. LANs, IEEE 802 standards, performance. Switched Ethernet, FDDI, bridges. Wide area networks, packet switching networks, X.25. Frame relay, internetworking, DoD protocols, TCP, UDP. ATM LANs, adaptation layers, traffic issues. Prerequisite: Fourth-year registration in Electrical or Computer Systems Engineering. Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.464 ★****Digital Communications**

Advanced topics in digital communications. Error control coding. Bandwidth-efficient modulation. Trellis coding. Synchronization, phase locked loops. Selected topics of current interest: spread spectrum; digital wireless communications. Prerequisite: Engineering 94.351 ★ or 94.353 ★. Lectures three hours a week, laboratory six hours a term.

**Engineering 94.470 ★****Telecommunications Engineering**

Telecommunications as a national and international infrastructure. Systems view of network architecture: transmission, switching, signalling, and teletraffic; ISDN; network planning, management and control; global telecommunications, International Telecommunication Union; telecommunications industry as business enterprise (R & D, manufacturing, operations, human factors); standards: role of government, regulation and competition. Prerequisite: Engineering 94.351 ★. Lectures three hours a week, laboratory three hours alternate weeks.

**Engineering 94.471 ★****Communication Systems Analysis and Design**

Project-oriented level experience in the design of communication systems to meet user requirements. Lectures on queuing theory and teletraffic analysis; system specification and design: requirements analysis, solution alternatives, evaluation of alternative technologies, design, costing, implementation, test. Prerequisite: Registration in Fourth-year Communications Engineering. Lectures two hours a week, laboratory four hours a week.

**Engineering 94.480 ★****Software Engineering**

Review of software lifecycles and requirements analysis. Software design, with emphasis on methods for real-time systems. Testing, verification and validation, quality assurance and control. Project planning and management. Maintenance and configuration management. Software reuse during design and maintenance.



nance.

Prerequisites: Engineering 94.310★ and 94.333★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 94.485★

**Computer Systems Design Laboratory**

Developing professional-level expertise in selected, important areas of the field by applying, honing, integrating, and extending previously acquired knowledge in team projects in the laboratory. Lecture periods are devoted to new knowledge required for the selected areas, to project-related issues, and to student presentations.

Prerequisites: Engineering 94.361★ or 97.461★, and 94.480★ and registration in Fourth-year Computer Systems Engineering. (Students are encouraged to enrol in both Engineering 94.480★ and 94.485★ in the same academic year.)

Lectures two hours a week, laboratory four hours a week.

Engineering 94.496★

**Special Topics in Electrical and Computer Systems Engineering**

At the discretion of the Department, a course dealing with selected advanced topics of interest to Electrical and Computer Systems engineering students may be offered. (Also listed as Engineering 97.496★).

Prerequisite: Permission of the Department.

Engineering 94.497

**Engineering Project**

Students are required to complete a major project in engineering analysis, design, development, or research. The objective is to develop initiative, self-reliance, creative ability, and engineering judgement. The results are submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc.

Engineering 94.498

**Engineering Project**

Students are required to complete a major project in engineering analysis, design, development, or research. The objective is to develop initiative, self-reliance, creative ability, and engineering judgement. The results are submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc.

# Technology, Society, Environment Studies (Science)

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460 Steacie Building  
Telephone: 520-4483  
Fax: 520-4389

## Academic Administration

**Chair,** Peeter Kruus (*Technology, Society, Environmental Studies and Environmental Science*)

**Members,**

B. Burns (*Industrial Design*)

J. Carson (*Library*)

J.P. Corriveau (*Computer Science*)

W. Lawson (*Business*)

I. Pressman (*Mathematics and Statistics*)

S. Richer (*Sociology/Anthropology*)

J. Taylor (*History*)

P.D. van der Puije (*Engineering*)

## Teaching Staff

**Professor**

**Peeter Kruus**, B.Sc. (Toronto), Lic.Tech. (Denmark), Ph.D. (Toronto)

**Adjunct Research Professors**

**John Buschek** (Publisher) • **R.W. Morrison** (Natural Resources Canada) • **C.G. Wldstrand** (Consultant)

**Sessional Lecturers**

**J. Buschek**, B.S. (Syracuse), Ph.D. (Wisconsin) • **J. Carson**, B.A. (Bishop's), B.A. (Ottawa), M.A. (Western Ontario), M.L.S. (Western Ontario) • **R.W. Morrison**, B.Eng. (McGill), Ph.D. (Paris)

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## General Information

It is becoming increasingly apparent that:

1. The future of the Western societies depends on their ability to cope with the complex problems resulting from the interactions of Technology, Society and the Environment (TSE).
2. The effectiveness of the democratic political process is contingent upon the perception and comprehension of these phenomena by the electorate.
3. Because of the complexity and the wide range of the problems involved, their understanding cannot be gained through specialized education in traditional disciplines. A multidisciplinary approach is required.

The multidisciplinary courses listed below, offered under the direction of the TSE Studies Committee, seek to fulfil this need. They are designed to provide students from all faculties with a solid basis for understanding the major problems of industrialized society, and with firsthand appreciation through research project work, of the complexities involved. The TSE courses are open to all students beyond the First year; these courses are especially recommended for students at the Third- and Fourth-year levels. Students enrolled in three-year programs, however, who would like to take these courses are encouraged to take TSE 59.300 in the Second year.

Students may also submit a coherent pattern of courses in TSE Studies for a B.A. (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 213. Assistance in planning such a pattern is available from members of the TSE Committee.

## Courses

**Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.**

Technology, Society, Environment 59.301 ★

**Technology-Society Interactions**

Ethical issues in introducing technology; historical review of technology and human development; effects on society of medical and communications technologies; automation and its effects on society, especially work; impact of technology on international affairs, especially through multinational enterprises. Guest lectures. Precludes additional credit for Technology, Society, Environment 59.300 and 59.350 ★.

Prerequisites: At least Second-year standing.

Lectures and workshops three hours per week.

Technology, Society, Environment 59.302 ★

**Energy**

History of energy use by humans; utilization of renewable energy sources; energy and agriculture; energy and mineral resources; options for electricity generation; nuclear energy; risks of accidents in large systems, e.g. nuclear plants, hydro dams. Guest lectures.

Prerequisites: At least Second-year standing.

Lectures and workshops three hours per week.

Technology, Society, Environment 59.350 ★

**Interactions in Industrial Society**

Ethical issues involving technology; effects on society of automation, medical and communications technologies; technology and international affairs; energy use by humans; renewable energy sources; energy in agriculture and mineral extraction; electricity generation; nuclear energy; accidents in large systems, e.g. nuclear plants and hydro dams. Guest lecturers.



Lectures in common with 59.301★ and 59.302★.  
Precludes additional credit for Technology, Society, Environment 59.301★, 59.301★ and 59.300.

Prerequisites: At least Second-year standing.  
Lectures three hours per week for both terms.

Technology, Society, Environment 59.401★

**Technology and Society: Assessment**

Examines the complex practice of evaluating technology's impact on society and the environment; risk analysis; cost-benefit analysis; technology regulation; retrospective project assessment; necessary aspects of assessment and assessment examples. Guest lecturers.

Prerequisite: Third-year standing or equivalent.  
Lectures and workshops three hours a week.

Technology, Society, Environment 59.402★

**Technology and Society: Forecasting**

Methods used for forecasting technological and social changes; factors involved in such change. Guest lecturers.

Prerequisite: Third-year standing or equivalent.  
Lectures and workshops three hours a week.

Technology, Society, Environment 59.403★

**Technology and Society: Innovation**

Technological and social innovation, especially in Canada: historical examples; the relation of innovation to economic development; analysis of the steps involved; effect on employment; impediments and incentives. Guest lecturers.

Prerequisite: Third-year standing or equivalent.  
Lectures and seminars three hours a week.

Technology, Society, Environment 59.405★

**Technology and Society: Information**

Investigation of the human and social impacts of electronic information and communication on our working, educational, and personal lives from various disciplinary perspectives; problem issues and competing values in the creation, manipulation, dissemination, and control of information are identified; resolution initiatives encouraged. Guest lecturers.

Prerequisite: Third-year standing or equivalent.  
Lectures and seminars three hours a week.

Technology, Society, Environment 59.406★

**Technology and Society: Work**

Explores the relationship between technology, employment and the individual; work organizations; employment restructuring; rural/urban split; the impact of information technologies; demographic impacts and globalization; Canadian issues and public policy explored. Guest lecturers.

Prerequisite: Third-year standing or equivalent.  
Lectures and workshops three hours a week.

Technology, Society, Environment 59.407★

**Product Life Cycle Analysis**

Life cycle analysis of products and processes, from resource extraction through design and use to waste management or recycling; social and environmental implications of product design and use; how we value material objects and the environment; consumerism; evolution of design. Guest lectures.

Prerequisite: Third-year standing or equivalent.  
Lectures and workshops three hours a week.

## Other Related Courses

Other courses related to the TSE area offered by various departments and schools within the University are listed for the convenience of students. Detailed course descriptions are given under

the appropriate faculty or department. Please note that all prerequisite conditions prescribed for these courses must be met.

### *Architecture*

76.105★, 76.302★, 76.318★, 76.319★, 76.423★, 77.101★, 77.135★, 77.300★, 78.340★, 78.350★

### *Biology*

61.192★, 61.216★, 61.391★, 61.331★, 61.430★, 61.431★

### *Chemistry*

65.100, 65.103★, 65.280★, 65.370★, 65.380★, 65.480★

### *Classics*

13.235

### *Earth Sciences*

67.105, 67.238★

### *Economics*

43.100, 43.363★, 43.385★, 43.386★

### *Engineering*

82.433★ (also Geography 45.433★), 82.334★ (also Geography 45.434★), 82.440★, 82.495★

### *English Language and Literature*

18.207

### *Film Studies*

19.333

### *Geography*

45.102★, 45.211★, 45.220★, 45.230★, 45.231★, 45.320★, 45.426★, 45.329★, 45.330★, 45.336★, 45.351★, 45.404★, 45.430★, 45.445★

### *History*

24.221, 24.234, 24.254, 24.329★, 24.421

### *Law*

51.102★, 51.323★, 51.325★, 51.352★ (also Mass Communication 27.352★ and Journalism 28.352★), 51.358★, 51.380★, 51.493★, 51.494C★

### *Mass Communication*

27.305★, 27.342★, 27.343★, 27.410★, 27.450★, 27.451★

### *Philosophy*

32.184★, 32.284★, 32.332★, 32.351

### *Physics*

75.101★, 75.102★, 75.291★

### *Political Science*

47.306★, 47.319★, 47.341★, 47.342★, 47.346★, 47.367★, 47.402★, 47.403★, 47.508★

### *Psychology*

49.100, 49.210★, 49.220★, 49.270★, 49.311★, 49.313★, 49.345★, 49.372★, 49.405★

### *Science*

60.101★, 60.102★, 60.201★, 60.202★

### *Sociology and Anthropology*

54.275★, 53.251★, 56.253★, 53.254★, 53.260★, 54.333★, 54.335★, 53.339★, 53.346★, 53.351★, 56.360, 53.424★ (also Architecture 76.424★), 53.440★, 53.380, 53.451★

# Women's Studies

## (Arts and Social Sciences)

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A812 Loeb Building  
Telephone: 520-6645  
Fax: 520-2154

### Academic Administration

**Director, Katherine Arnup**

### Teaching Staff

**Joint Chair in Women's Studies (Carleton University and University of Ottawa), Vacant**

#### Associate Professors

**Katherine Arnup, B.A. (Toronto), B.Ed., M.Ed. (OISE), Ph.D. (Toronto) • Fran Klodawsky, B.A. (Toronto), M.A. (Ohio State), Ph.D. (Queen's) (Geography/Women's Studies)**

#### Assistant Professor

**Susan Whitney, B.A. (Princeton), M.A. (Brown), Ph.D. (Rutgers) (History/Women's Studies)**

#### Adjunct Professor

**Helen Levine (Women's Studies/Social Work)**

#### Adjunct Research Professors

**Nancy Adamson, (University Secretary) • Heather Menzies (Canadian Studies/Women's Studies) • K.A. Scott**

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### General Information

In September 1987, Carleton established the Institute of Women's Studies, which was renamed the Pauline Jewett Institute of Women's Studies in September 1993, to honour the distinguished scholar and social activist Pauline Jewett (1922-1992), Chancellor of Carleton University from 1990 to 1992.

The Pauline Jewett Institute continues to expand on the work of its predecessor, the Interfaculty Committee on Women's Studies, established in 1975. The Institute fosters research and study from a feminist perspective and seeks to promote an awareness on the part of all disciplines of the need to include a fuller treatment of women's experience. Joining in this venture is the Joint Chair in Women's Studies, held jointly at Carleton and the University of Ottawa, and housed at Carleton in the Pauline Jewett Institute.

Carleton was one of the first universities in Canada to offer courses on women, beginning with a course on women's history offered first in 1971-72. Since then, courses and programs have developed in several academic units throughout the university. Beginning in the academic year 1989-90, Combined B.A. (Honours) and Combined B.A. programs in Women's Studies and a second Arts or Social Sciences discipline have been offered through the Institute of Women's Studies. The Combined Honours program requires a deeper study of the methodological and theoretical implications of Women's Studies. The Combined B.A. program is intended to give students a general overview of the field of Women's Studies. Both programs offer interdisciplinary perspectives while also requiring students to develop a disciplinary base for their studies.

Students enrolled in a B.A. or B.A. (Honours) program in another discipline may also elect to complete a Minor in Women's Studies.

### Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 49), all Faculty regulations including those relating to First-Year Seminars and Breadth courses (see p. 72), in addition to all Institute regulations and requirements as set out below.

### Combined B.A. (Honours) Program

Students planning a Combined B.A. (Honours) program are advised to consult with the Director of the Institute of Women's Studies. The requirements for a Combined B.A. (Honours) in Women's Studies are at least 7.0 credits as follows:

1. Women's Studies 09.188 or 01.142 or 01.143
2. Women's Studies 09.280★ and 09.281★
3. Women's Studies 09.388
4. Electives: 3.0 credits from Anthropology 54.248★, 54.249★, Comparative Literary Studies 17.302, English 18.292, History 24.254, 24.346★, 24.354, 24.363★, 24.375★, Law 51.301★, Linguistics and Applied Language Studies 29.273★, Mass Communication 27.355★, Music 30.332★, 30.433★, Philosophy 32.236★, 32.237★, Political Science 47.350★, 47.351★, 47.352★, Psychology 49.363★, Religion 34.203★, 34.325★, Sociology 53.247
5. 400-level elective.  
1.0 additional credit from: Women's Studies 09.490★, 09.491★, 09.492★, 09.498, Business 42.462★, History 24.452, 24.454, 24.459, Law 51.401★, Political Science 47.450★

Other courses may be substituted for the credits specified above in items 4 and 5 (e.g. Law 51.384, Art History 11.400★) when material on gender and/or women's experience is central to the



course. Such substitutions must be individually approved by the Institute of Women's Studies.

## Combined B.A. Program

Students planning a Combined B.A. program are advised to consult with the Director of the Institute of Women's Studies.

The requirements for a Combined B.A. program in Women's Studies and another discipline are at least 5.0 credits as follows:

1. Women's Studies 09.188 or 01.142 or 01.143
2. Women's Studies 09.280★ and 09.281★
3. Electives: 3.0 credits from Anthropology 54.248★, 54.249★, Comparative Literary Studies 17.302, English 18.292, History 24.254, 24.346★, 24.354, 24.363★, 24.375★, Law 51.301★, Linguistics and Applied Language Studies 29.273★, Mass Communication 27.355★, Music 30.332★, 30.433★, Philosophy 32.236★, 32.237★, Political Science 47.350★, 47.351★, 47.352★, Psychology 49.363★, Religion 34.203★, 34.325★, Sociology 53.247

Other courses may be substituted for the credits specified above in item 3 (e.g. Law 51.384) when material on gender and/or women's experience is central to the course. Such substitutions must be individually approved by the Institute of Women's Studies.

## Minor in Women's Studies

Students enrolled in a B.A. (Honours) or B.A. program in another discipline may also elect to complete a Minor in Women's Studies. Students wishing to pursue a minor in Women's Studies are required to complete 4.0 credits, selected from the following list.

1. Women's Studies 09.188 or 01.142 or 01.143
2. Women's Studies 09.280★ and 09.281★
3. 2.0 credits selected from the following courses, at least 1.0 must be at the 300-level. Women's Studies 09.388, Anthropology 54.248★, 54.249★, Comparative Literary Studies 17.302, English 18.292, Film Studies 19.331★, History 24.254, 24.346★, 24.354, 24.363★, 24.375★, Law 51.301★, Linguistics and Applied Language Studies 29.273★, Mass Communications 27.355★, Music 30.332★, 30.433★, Philosophy 32.236★, 32.237★, Political Science 47.350★, 47.351★, 47.352★, Psychology 49.363★, Religion 34.203★, 34.325★, Sociology 53.247.

Note: Other courses may be substituted for the credits specified above when material on gender and/or women is central to the course. Such substitutions must be individually approved by the Institute.

## Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1998-99, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

First-Year Seminar in Women's Studies 01.142

**Issues in Women's Studies**

See course description on p. 87.

First-Year Seminar in Women's Studies 01.143

**Women and the Arts**

See course description on p. 87.

Women's Studies 09.188

**Introduction to Women's Studies**

Women in contemporary society: gender differentiation, women's relationship to such issues as politics, religion, work, health, the law, and the arts; and the intellectual, historical and social origins of feminism.

Precludes additional credit for Women's Studies 09.288.

Lectures and discussion three hours a week.

Women's Studies 09.280★

**Gender and Diversity**

Exploration of how definitions of gender are associated with other social categories, and how some, such as race, ethnicity, class, sexual orientation and ability/disability, affect women's experiences as individuals and as members of groups.

Prerequisite: Women's Studies 09.188 (formerly 09.288) or 01.142 or 01.143 or Interdisciplinary Studies 03.101.

Lectures and discussion three hours a week.

Women's Studies 09.281★

**Topics in Women's Studies**

Interdisciplinary analysis of topics in women's studies focusing on the relationship between women's public activism and feminist thought, and between cultural perceptions of women and women's experiences. The topic will be announced by July 1.

Prerequisite: Women's Studies 09.188 (formerly 09.288) or 01.142 or 01.143

Lectures and discussion three hours a week.

Women's Studies 09.388

**Theory and Methods From a Feminist Perspective**

Exploration of emerging feminist literatures in the humanities and in the social, natural and applied sciences. Feminist critiques of prevailing approaches to knowledge and feminist contributions to the development of theory and method are considered.

Prerequisites: Third-year standing and Women's Studies 09.188 (formerly 09.288) or 01.142 or 01.143

Lectures and discussion three hours a week.

Women's Studies 09.490★ A and B Sections

**Independent Study**

Reading or research course supervised by a faculty member. Written proposal approved by the supervisor must be submitted before last day of course changes. Normally, only 0.5 credit of independent study may be counted in the program.

Prerequisites: Third- or Fourth-year standing and permission of the Institute of Women's Studies.

Women's Studies 09.491★

**Selected Topics in Women's Studies I**

Prerequisite: Permission of the Institute of Women's Studies.

Seminar three hours a week.

Women's Studies 09.492★

**Selected Topics in Women's Studies II**

Prerequisite: Permission of the Institute of Women's Studies.

Seminar three hours a week.

Women's Studies 09.498

**Honours Research Essay**

Students in the Combined Honours Program in Women's Studies and another discipline may write an honours research essay in Women's Studies. The subject for research is settled in conjunction with the Institute and an appropriate supervisor.

Prerequisites: Fourth-year standing in Women's Studies and Women's Studies 09.388.

**Courses with Substantial Material on Gender or Women's Experience Offered Within the Faculty of Arts and Social Sciences, the Faculty of Public Affairs and Management and the Faculty of Graduate Studies and Research**

The following course offerings are listed here for the convenience of students. Detailed course descriptions are given under the appropriate faculty, or interdisciplinary listing.

Note: Special Topics courses and other courses offered by units throughout the university may in any given year contain substantial material on Gender and/or Women's Experience. Recent examples include offerings in the Departments of Art History, Geography, History, Journalism and Sociology.

**Faculty of Arts and Social Sciences**

*Art History*

11.514★

*Canadian Studies*

12.520

*Comparative Literary Studies*

17.302

*English Language and Literature*

18.292

*Geography*

45.544

*History*

24.254, 24.346 ★, 24.354, 24.363 ★, 24.375 ★, 24.452, 24.454, 24.459, 24.559

*Linguistics and Applied Language Studies*

29.273 ★

*Music*

30.332 ★, 30.433 ★, 30.505 ★

*Philosophy*

32.236 ★, 32.237 ★

*Psychology*

49.363 ★, 49.580 ★

*Religion*

34.203 ★, 34.325 ★

*Sociology-Anthropology*

53.247, 53.482 ★, 53.537 ★, 53.538 ★/54.538 ★, 53.548 ★/ 54.548 ★, 54.550 ★, 53.568 ★, 54.248 ★, 54.249 ★, 54.519 ★, 56.241, 56.459 ★

**Faculty of Public Affairs and Management***Business*

42.462

*Law*

51.301 ★, 51.384, 51.401 ★, 51.402 ★, 51.502 ★, 51.532 ★

*Mass Communication*

27.355 ★

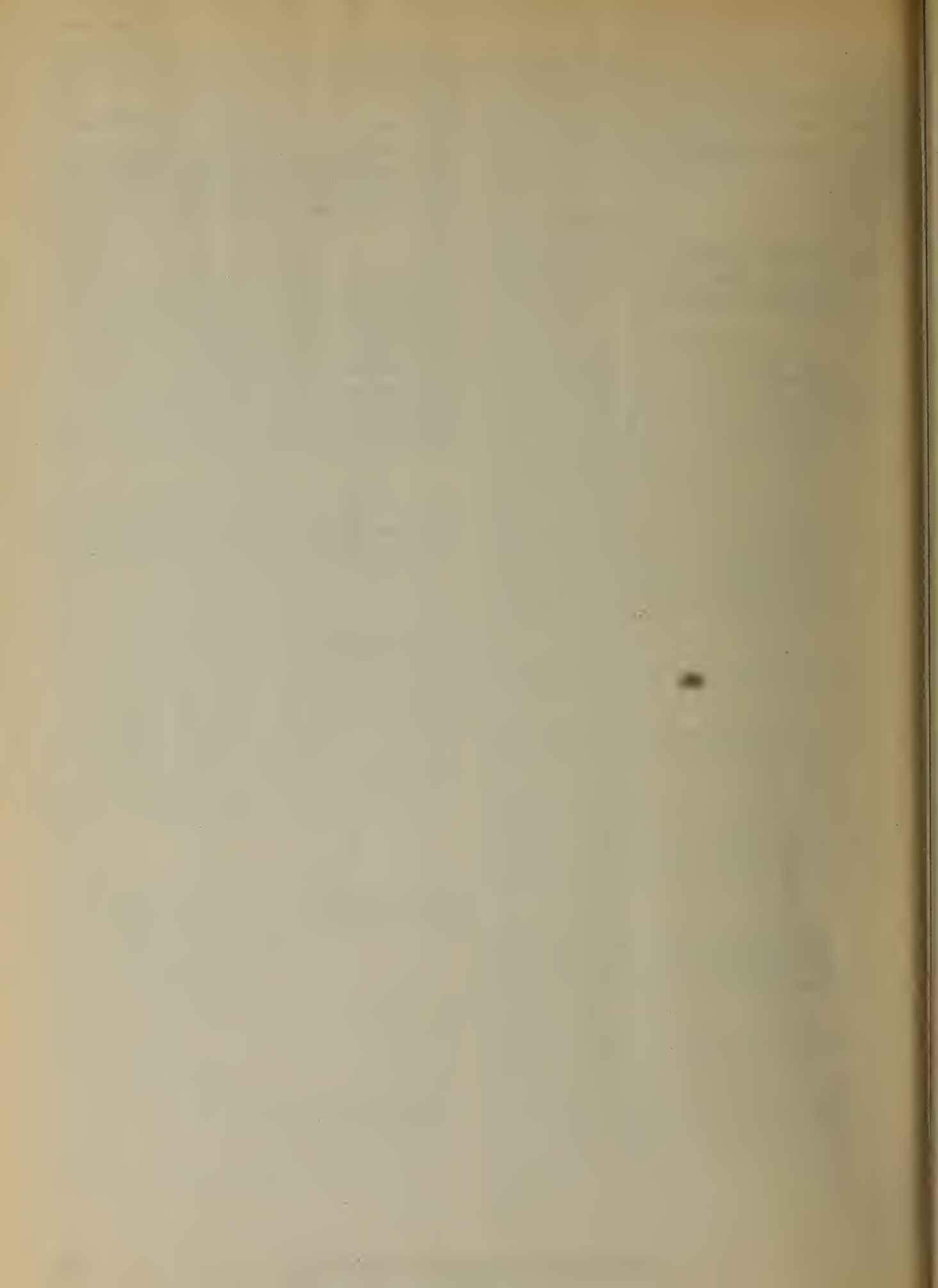
*Political Science*

47.350 ★, 47.351 ★, 47.352, 47.450 ★

*School of Social Work*

52.506 ★, 52.516 ★, 52.528 ★





# General Information

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- Awards and Financial Assistance
- Carleton Through the Years
- Public Lectures at Carleton University
- Officers of the University
- Officers of Instruction
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# Awards and Financial Assistance

## Awards for Academic Excellence

### Medals

#### *The Governor-General's Medal-Bachelor Degree Program*

Awarded annually to the graduating student with the highest academic standing in a Bachelor degree program. Donor: His Excellency the Governor General of Canada. Established 1952.

#### *The Chancellor's Medal*

Awarded annually in the name of the Chancellor of the University to a graduating student of outstanding academic achievement. Established 1962.

#### *The President's Medal*

Awarded annually in the name of the President of the University to the student with the highest standing in a B.A. program of studies. Established 1968; revised 1980.

#### *University Medals*

Awarded annually, when merited, to the graduating students standing highest in Arts, Social Sciences, Science, Engineering, Architecture, Commerce, Computer Science, Journalism, Industrial Design, interfaculty studies, Music, Public Administration and Social Work. Established 1949.

#### *Senate Medals*

Awarded, when merited, to graduating students of outstanding academic achievement. Established 1952.

#### *Lieutenant-Governor's Medal in Architecture*

Awarded annually, when merited, to the student standing at the head of the graduating class in Architecture. Established 1979.

## Undergraduate Entrance and In-Course Scholarships and Awards

Carleton University awards scholarships tenable at the University, in the Fall/Winter session of the year of offer, to entrance and in-course full-time undergraduate students who have demonstrated a high potential for university studies. The intention of the scholarship policy is to recognize, attract and provide incentives for excellence. The total value of the scholarship or scholarships awarded is determined by the student's most recent academic standing.

The following entrance scholarships will be offered in 1998-99:

- Eight Chancellor's scholarships with a total possible value of \$20,000 over four years, (\$5,000 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better. *These scholarships require an application, which must be completed and returned to the Awards Office by May 14.* Priority will be given to academic performance, but the committee will also consider the applicant's other interests and activities during secondary school.
- Students may be offered the following scholarships provided that a complete application for admission has been received by the University's Office of Admissions and Academic Records directly or through the Ontario Universities' Application Centre by June 15:
- Scholarships with a total possible value of \$12,800 over four years (\$3,200 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better.

- Scholarships with a total possible value of \$8,000 over four years (\$2,000 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better.
- Scholarships with a total possible value of \$6,000 over four years (\$1,500 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better.
- Academic Entrance Awards of \$500 for one year only.
- Fifteen awards valued at \$500 for the entrance year only, to be given to the top students entering Carleton from secondary schools in the Regional Municipality of Ottawa-Carleton. This award will be in addition to any other the student may receive from Carleton.

All in-course students and all graduating students who meet the academic requirements for the awarding of University in-course scholarships will be named to the Deans' Honour List for every year in which they qualify.

University in-course scholarships (based on full- or part-time study) will be awarded on the following conditions:

1. The student must be enrolled in a degree program at the time of selection;
2. The student will not be offered a scholarship beyond the Fourth year of study;
3. A GPA of 10.0 or better is required;
4. The grade points of all credits taken in the period considered for the scholarship will be used to calculate the GPA;
5. No *F*, or *Abs* will be acceptable during the period considered for the scholarship;
6. No grades achieved through a grade-raising examination will be considered;
7. Each summer, the Selection Subcommittee will determine the value of the scholarships to be awarded for each GPA; and
8. Students in the Co-operative Education stream and the Industrial Experience program will not draw upon scholarship funds for a work period. On returning to full-time studies they will come under scholarship provisions.

#### *Full-time Students:*

1. The definition of a full-time student is a student who registers in a minimum of 4.0 credits during the Fall/Winter Session.
2. Scholarships will be based on all credits taken in the 12-month period May to April.
3. In order to hold the scholarship, the student must be returning to Carleton as a full-time undergraduate student.

#### *Part-time Students:*

1. The definition of a part-time student is a student who registers in fewer than 4.0 credits during the Fall/Winter Session.
2. Candidates will be considered for scholarships based on the average of all credits (minimum of four) taken in the past 24 month period (May-April). However, if the candidate was awarded a scholarship the previous spring, a minimum of four new credits must be considered for the new scholarship; the same credit may not be used twice for scholarship consideration.
3. The student must be continuing at Carleton in his or her undergraduate degree program.

**Note:** Since the income from funds may vary from year to year, the values shown for scholarships, awards and bursaries may change.

## Scholarships and Awards by Faculty

Scholarships and awards of varying amounts, which are of interest to students in specific programs, are listed below:

### Faculty of Arts and Social Sciences

#### Arts

A. Andras Memorial Grant  
Award of the Embassy of Austria (German)  
Jack Barwick and Douglas Duncan Memorial Scholarship in Art History  
Jack Barwick and Douglas Duncan Memorial Scholarship in Music  
David K. Bernhardt Award in Psychology  
Karl Bernhardt Scholarship in Psychology  
Landen Dominic Burnett Memorial Award (Art History)  
The Colonel John By Award for History  
Carleton Beaverbrook Awards for Freedom of the Press (History)  
CHEZ-FM Research Award in Sociology and Anthropology  
Coulson Memorial Scholarship (Classics)  
Bertha F. Davis Award in Religion  
Department of French Awards  
Awards of the Embassy of France (French)  
Awards of the Embassy of the Federal Republic of Germany (German)  
Fitzroy Township Historical Society Scholarship  
Richard Glover Scholarship (History)  
Louis and Miriam Goldstein Book Award in Judaic Studies (Religion)  
Rosemarie Hoey Award in English  
Sara Helen Parry Hughes Travel Award (Spanish)  
Award of the High Commission of India (Religion)  
Allama Mohammad Iqbal Award (Religion)  
Award of the Embassy of Italy (Italian)  
George Johnston Poetry Award (English)  
Eldon Kaye Memorial Scholarship (French)  
Marston LaFrance Memorial Award in English  
David Carton MacDonald Memorial Award (English)  
Macdonald Club Awards in Music  
R.L. McDougall Award in English  
Music Award  
Jayashree A. Nagpur Memorial Award (English)  
Bettina Oppenheimer Memorial Scholarship in Music  
Ordine Italo-Canadese Scholarship (Italian)  
Robert E. Osborne Award (Religion)  
Ottawa Film Society Scholarship for Film Studies  
Ottawa Women's Canadian Club Scholarship (Canadian Studies)  
Department of Russian Undergraduate Award  
Award of the Embassy of Spain (Spanish)  
Bette Spooner Award in Classics  
Randell Stanton Memorial Book Prize (English)  
Barbara Sudall Book Prize (English)  
Award of the Ambassador of Switzerland to Canada (French, German, Italian)  
Michael Thompson Scholarship in English  
Underhill Prize (History)  
R.A. Wendt Book Prize (Psychology)  
Wilgar Memorial Award in English  
Gordon J. Wood Scholarships in English  
Susan Joan Wood Memorial Scholarship (English)  
Hume Wrong Scholarship (History)

### Faculty of Engineering

#### Architecture

Michael Russell Coote Memorial Award  
The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Entrance Scholarship  
The Education Foundation of the Federation of Chinese Canadian

Professionals of Ontario Scholarship  
Ontario Association of Architects Awards  
Page and Steele School of Architecture Scholarship  
Jacques and Hélène Sabourin Memorial Scholarship  
Nicholas C. Scolozzi Scholarship in Architecture  
Randell Stanton Memorial Book Prize

#### Engineering

Adjeleian Allen Rubeli Prize  
AFCEA Scholarship  
Rajesh Ahluwalia Memorial Scholarship  
American Society for Metals Award in Engineering  
Building Envelope Council, Ottawa Region, Award  
Joseph and Yvonne Bulger Scholarship in Engineering  
Chipworks Award  
Consulting Engineers of Ontario Scholarship  
CSME Gold Medal  
W.R. Davis Engineering Scholarship  
Engineering Institute of Canada Award  
Golder Associates Award  
Krishnakumar Gopalan Memorial Scholarship  
Andrew S. Haydon Scholarship  
Kipling Award  
Roderick C. McDonald Memorial Scholarship in Engineering  
McNaughton Scholarship  
Luigi Mion Scholarship in Engineering  
National Capital Harvard Business School Alumni Club Book Prize  
Ontario Hydro Engineering Award  
Ontario Professional Engineers Foundation for Education Scholarship  
Dr. C. Stewart Parsons Scholarship in Engineering  
The Robert Pickard Scholarship in Environmental Engineering  
Pratt & Whitney Canada (Undergraduate) Scholarships  
James H. Rattray Memorial Scholarship  
Rolls-Royce Scholarship  
Eric Sigurdson Award  
Stentor Scholarships in Communications Engineering  
Vered Foundation Scholarships

#### Industrial Design

Michael Elmarson Award  
George A. Lynn Memorial Scholarship  
Barrington Nevitt Memorial Award  
Purvins Memorial Award

### Faculty of Science

#### Science

Motoshi Asano Memorial Scholarship in Chemistry  
Paul R. Beesack Memorial Scholarship in Mathematics  
Berke Scholarship in Chemistry  
Dr. M. Ralph Berke Award in Chemistry  
Director's Award in Biochemistry  
Charles Anthony Blundell Betts Memorial Scholarship in Physics  
J.P. Bickell Foundation Scholarships (Geology)  
The Canadian Society for Chemistry Medal  
Canadian Society of Petroleum Geologists Undergraduate Student Award  
Society of Chemical Industry Award  
W.H. Collins Memorial Scholarship  
Catherine Daumery Memorial Award for Botanical Collection  
Director's Award in Environmental Science  
Josef Dlouhy Memorial Scholarship in Chemistry  
The Al Donaldson Award in Precambrian Geology  
Dr. Reginald T. Elworthy Award in Chemistry  
E. Alison Flood Award in Physical Chemistry  
GAC-MAC Undergraduate Scholarship in Earth Sciences  
Peter Gerard Harris Memorial Award (Mass Communication)  
Ian H. Griffith Memorial Scholarships  
Simon Guest Memorial Book Prize (Geology)  
Trevor A. Harwood Memorial Award  
E.P. (Ted) Hincks Memorial Scholarship in Physics



E.P. Hincks Award of the Institute of Particle Physics  
J.M. Holmes Entrance Scholarship in Chemistry  
Professor James M. Holmes Scholarship in Chemistry  
Janet M. Holmes Memorial Scholarship (Chemistry)  
Dr. Harry Katznelson Memorial Scholarship (Biology)  
Department of Mathematics and Statistics Entrance Award  
Betty Nesbitt Memorial Award in Biology  
H.H.J. Nesbitt Scholarship in Biology  
F.K. North Award in Geology  
Dr. Iain Ogle Memorial Scholarship (Geology)  
Ottawa Section of the Petroleum Society of CIM Annual Award  
R.L. Rosenberg Memorial Scholarship in Mathematics  
Richard J. Semple Memorial Award in Mathematics  
L.N. Wadlin Scholarship in Mathematics  
Elizabeth White Memorial Award for Zoological Collection  
Donald R. Wiles Scholarship in Chemistry  
Morley E. Wilson Scholarship (Geology)

### Computer Science

CIPS Ottawa Section Scholarship  
Jamie Corbet Memorial Award  
Fulcrum Technologies Inc. Scholarship  
Andrew S. Haydon Scholarship  
National Capital Harvard Business School Alumni Club Book Prize  
John R. Pugh Scholarship  
Derek Rymerson Scholarship  
David A. Thomas Scholarship in Computer Science  
Goldie Wilkinson Scholarship

### Faculty of Public Affairs and Management

Abbott Memorial Award in Law  
Bay Street Challenge Award for Excellence in Information Systems  
Bay Street Challenge Award for Excellence in International Business  
Bay Street Challenge Scholarship for Excellence in Securities Finance  
The Honourable Walter Baker Memorial Scholarship in Political Science  
Bank of Nova Scotia, Carleton University Branch Award in Commercial Law  
Professor T.N. Brewis Scholarship in Applied Economics  
Claude Brunelle Memorial Scholarship (Central/East European and Russian-Area Studies)  
CCH Canadian Limited Award in Taxation  
Carswell Company Book Award in Public Law  
Victor S. Castledine Scholarship (Economics or Business)  
CHEZ-FM Research Award(s) in Mass Communication  
Communications Law Prize  
Scholarship in Comparative Economics  
Economics Scholarship  
Elizabeth's Award in Family Law  
Randall Geehan Memorial Scholarship in Quantitative Economics  
Irwin Gillespie Award in Economics  
Mr. and Mrs. Louis L. Goldstein Book Award in Law  
Peter Gerard Harris Memorial Award (Mass Communication)  
KPMG Scholarship  
R.A. MacKay Award in Political Science  
Betty Nesbitt Memorial Award in Biology  
The Osgoode Society Legal History Book Prize  
Oxford University Press Award in Law  
Prince Memorial Achievement Award (Economics)  
Rogers Communications Award in Mass Communication  
R.L. Rosenberg Memorial Scholarship in Mathematics  
Celia Ruygrok Memorial Scholarship (Criminology and Criminal Justice)  
Richard J. Semple Memorial Award in Mathematics  
Vered Foundation Scholarship (Political Science)  
Jessie and Wreford Watson Award in Geography  
Hume Wrong Scholarship (Political Science)  
YTV Canada Inc. Youth & Television Award (Mass Communication)

### Business

Bay Street Challenge Award for Excellence in Information Systems  
Bay Street Challenge Award for Excellence in International Business  
Bay Street Challenge Scholarship for Excellence in Securities Finance  
Victor S. Castledine Scholarship  
Certified General Accountants Association of Ontario Award for Excellence  
Deloitte & Touche Scholarships  
Ernst & Young Award  
Lil Fallis Scholarship  
W.P. MacDonald Memorial Scholarship in Accounting  
D.F. McKechnie Award in Accounting  
National Capital Harvard Business School Alumni Club Book Prize  
James Nolan Memorial Award  
Stewart G. Paul Memorial Award  
Charles Pinhey Award  
Samuel Sair Prize in Business Ethics  
Lawrence Segal Memorial Fund  
Women's Business Network Association of Ottawa Scholarship

### Journalism

John E. Bird Memorial Scholarship  
Elissa Gail Bonder Scholarship in Journalism  
Julie Bycraft Memorial Scholarship  
The Canadian Corporate News Scholarship in Journalism  
Wilfrid Eggleston Award in Journalism  
Bob Farquharson Memorial Award in Journalism  
The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship  
Blair Fraser Memorial Award for Journalism Graduates  
Goldblatt Scholarship in Journalism  
Marisa Ann Golini Memorial Scholarship in Journalism  
Margaret Graham Award  
Mitch Jacobson Memorial Award in Photojournalism  
Judith Johansen Memorial Award  
Journalism Writing Style Book Award  
Charles Lazarus Scholarship  
Jeannette Matthey Memorial Scholarship  
National Capital Harvard Business School Alumni Club Book Prize  
Marjorie Nichols Memorial Award  
Ottawa Citizen Scholarship in Journalism  
Peter Reilly Scholarship  
Rogers Communications Award in Television Journalism  
Herman and Zelda Roodman Award in Journalism  
E. Norman Smith Memorial Award  
Kenneth F. Smith Memorial Award in Journalism  
Richard R. Snell Memorial Award in Journalism  
Thomson Award for Reporting  
Vistas Scholarship  
Kenneth R. Wilson Memorial Award for Journalism Graduates  
Phyllis Wilson Award in Journalism.

### Undergraduate In-Course Scholarships for Part-Time Students

Undergraduate University Scholarships  
University Women's Club of Ottawa Scholarships

### Undergraduate Scholarships and Awards

#### *Abbott Memorial Award in Law*

Value \$200. Awarded annually for proficiency in Law courses taken at Carleton University to a student planning to enter law school. Donor: Dr. Frank Abbott. Established in 1997 in memory of Mrs. George S. Abbott and Professor Richard D. Abbott, founding Chair of the Department of Law.

#### *Adjeleian Allen Rubeli Prize*

Awarded annually, on the recommendation of the Chair of the Department of Civil Engineering, to the students submitting the best



and second best Fourth-year engineering project. Donor: Adjeleian Allen Rubeli & Associates. Endowed 1989.

#### *AFCEA Scholarship*

Value \$1000. Awarded annually, on the recommendation of the Dean of Engineering or the Director of the School of Computer Science. This scholarship is given alternately to a student in the Electrical or Computer Systems program and the Computer Science program. The recipient must be an outstanding student who is a Canadian citizen proceeding from Third to Fourth year of the program. Donor: Armed Forces Communications and Electronics Association (AFCEA) Ottawa Chapter. Established 1990. Revised 1993.

#### *Rajesh Ahluwalia Memorial Scholarship*

Awarded annually, on the recommendation of the Dean of Engineering, to a deserving student proceeding from Third to Fourth year of an engineering program. Donors: Family and friends of Rajesh Ahluwalia, M. Engineering, Carleton 1975. Established 1993.

#### *American Society for Metals Award in Engineering*

Value \$100. Awarded annually to an outstanding student with an interest in materials engineering. Donor: Ottawa Valley Chapter, American Society for Metals. Established 1951. Revised 1984.

#### *A. Andras Memorial Grant*

To support the cost of a research project or paper undertaken by an undergraduate or graduate student attending Carleton University. This grant is awarded in alternate years for a research project in one of the following areas: (a) Jewish studies; (b) trade union history or the democratic socialist movement in Canada. Endowed 1972 in memory of the late Mr. A. Andras, a member of Carleton's Board of Governors. Revised 1978.

#### *Motoshi Asano Memorial Scholarship in Chemistry*

Awarded annually on the recommendation of the Department of Chemistry to a student in a Chemistry program. Preference shall be given to a full-time student in physical spectroscopy. Donated by the Asano family of Kobe, Japan, in memory of their son, Motoshi Asano, who received his Ph.D. in physical chemistry at Carleton in 1983, and who tragically lost his life in a mountain climbing accident two months later. Endowed 1984.

#### *Medal of the Association of Professional Engineers (Ontario)*

Awarded annually, when merited, to the graduating student standing highest in Engineering. Established 1961.

#### *Award of the Embassy of Austria*

For excellence in the study of German, a book award is offered annually by the Austrian Embassy in Canada. Established 1960.

#### *The Honourable Walter Baker Memorial Scholarship in Political Science*

Awarded annually on the recommendation of the Department of Political Science to one or more students finishing the Third year of an Honours program. The selection will be made on the basis of high academic standing, with consideration given to demonstrated political leadership or involvement in politics. This scholarship is given in memory of the Honourable Walter Baker, P.C., Q.C., M.P., B.A., a distinguished graduate of Carleton University. Endowed in 1984 by friends of the Honourable Walter Baker.

#### *Frederick William Baldwin Scholarship*

Awarded annually to outstanding students entering or proceeding from one year of program to another at Carleton University. Donor: Estate of Frederick William Baldwin. Endowed 1983.

#### *Bank of Nova Scotia, Carleton University Branch, Award in Commercial Law*

Value \$100. Awarded annually to a student with high standing in courses in the Commercial Law field. Donor: the Bank of Nova Scotia, Carleton University Branch. Established 1980.

#### *F. Luella Barrigar Scholarships*

Awarded annually to students entering Carleton University or proceeding from one year of program to another. Some preference

shall be given to students with an interest in music. These scholarships are provided through the bequest of the late Miss F. Luella Barrigar, a teacher of music at the Ottawa Teachers' College. Donor: The late F. Luella Barrigar. Endowed 1981.

#### *Jack Barwick and Douglas Duncan Memorial Scholarship for Art History*

Awarded annually to a student or students in the Art History program. The Director of the School for Studies in Art and Culture and faculty members of the Art History program are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Endowed 1972. Revised 1992.

#### *Jack Barwick and Douglas Duncan Memorial Scholarship for Music*

Awarded annually to a student or students in the Music program. The Director of the School for Studies in Art and Culture and faculty members of the Music program are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Endowed 1972. Revised 1992.

#### *Bay Street Challenge Award for Excellence in Information Systems*

Value \$500. Awarded annually, when merited, on the recommendation of the Director of the School of Business, to the student with the highest academic standing who is proceeding from Third to Fourth year of the Bachelor of Commerce program and is specializing in the information systems stream. Established in 1996 by a graduate of the School of Business to encourage competition among students.

#### *Bay Street Challenge Award for Excellence in International Business*

Value \$500. Awarded annually, when merited, on the recommendation of the Director of the School of Business, to the student with the highest academic standing who is proceeding from Second to Third year of the Bachelor of Commerce program and is specializing in the international business stream. Established in 1996 by a graduate of the School of Business to encourage competition among students.

#### *Bay Street Challenge Scholarship for Excellence in Securities Finance*

Two scholarships valued at \$1000 each. Awarded annually, on the recommendation of the Director of the School of Business, to the student who has achieved the highest marks in the course 42.352★ Principles of Investments and the student who has achieved the highest marks in the course 42.452★ Investment Management. Established in 1996 by a graduate of the School of Business to encourage competition among students and to raise awareness of the securities industry as a career option.

#### *Paul R. Beesack Memorial Scholarship in Mathematics*

A scholarship and book prize awarded annually to the student, continuing to the Second year of an Honours Program in the Department of Mathematics and Statistics, with the highest combined standing in the required (full-credit) mathematics courses of First year. Endowed in 1986 by the family, friends and academic colleagues of the late Paul R. Beesack, an outstanding analyst, who served this University, his department and his discipline with excellence.

#### *Berke Scholarship in Chemistry*

Awarded annually to an outstanding student proceeding to the Second year of an Honours Chemistry program. Donor: Dr. and Mrs. M. Ralph Berke. Endowed 1981.

#### *Dr. M. Ralph Berke Award in Chemistry*

The yield of a \$500 fund is awarded each year, if merited, on the recommendation of the Department of Chemistry for a prize to be awarded to an outstanding student majoring in chemistry proceeding from the Second to the Third year of the degree program. Donor: Dr. M. Ralph Berke. Endowed 1956.

#### *David K. Bernhardt Award in Psychology*

Awarded annually to Third or Fourth year undergraduate students who are registered in a program in the Department of Psychology



and who are in need of financial assistance. Endowed in 1997 by David K. Bernhardt, a member of the Department of Psychology from 1964 to 1996.

*Karl Bernhardt Scholarship in Psychology*

Awarded annually, on the recommendation of the Chair of the Department of Psychology, to a student entering the Fourth year of the Honours Psychology program who has demonstrated excellence in the area of Personality and/or Developmental Psychology. Endowed in 1992, by family, in memory of Professor Karl S. Bernhardt, a Canadian pioneer in child psychology and former Director of the Institute of Child Study at the University of Toronto.

*Charles Anthony Blundell Betts Memorial Scholarship in Physics*

Awarded annually, if merited, to a student of high proficiency in Physics, entering or continuing in Physics Honours or in the Major program, in the Second or subsequent years of the degree program. Donors: Mr. and Mrs. Oliver Betts, Birmingham, England, in memory of their son, Charles Anthony Blundell Betts. Endowed 1964.

*Dr. Thomas Betz Memorial Award*

Value \$1000. Awarded annually, when merited, on the basis of scholarly promise and potential for intellectual leadership. This award is open to undergraduate and graduate students. The recipient will be chosen on the recommendation of a Selection Committee chaired by the Dean of the Faculty of Graduate Studies and Research, from a list of candidates nominated by departments, schools and institutions. Established in 1990 by family, friends and colleagues in memory of Dr. Thomas Betz.

*J.P. Bickell Foundation Scholarships*

The Trustees of the J.P. Bickell Foundation have established in the Department of Earth Sciences, Faculty of Science, scholarships for students entering the geological profession, of a possible value of \$3,000 each. The scholarships may be awarded on entrance into the Honours Geological sequence at the First-, Second- or Third-year levels at Carleton University. The scholarships are payable over two or three years depending on the entrance level. Donor: J.P. Bickell Foundation, Trustees, National Trust.

*John E. Bird Scholarships*

Two scholarships are awarded annually to outstanding students who are proceeding from one year of program to another in a Degree program in Journalism. Donor: Estate of Mrs. V. Bird. Endowed 1981.

*Director's Award in Biochemistry*

Value \$100. Awarded annually to the Fourth-year Biochemistry student performing the most distinguished Honours Research project. Donor: Anonymous. Endowed 1981.

*Elissa Gail Bonder Scholarship in Journalism*

Awarded in alternate years, on the recommendation of the Director of the School of Journalism and Communication, to an outstanding student entering the First year of the Journalism program from a high school in the Regional Municipality of Ottawa-Carleton. Established in 1995 by Linda and Ted in memory of his daughter Elissa Gail Bonder who graduated posthumously from Lisgar Collegiate Institute in 1991.

*Professor T.N. Brewis Scholarship in Applied Economics*

Value \$1,000. Awarded annually on the recommendation of the Department of Economics to an undergraduate or graduate student in the department. Preference shall be given to a student who has shown aptitude in the field of applied economics. Professor Brewis was a distinguished member of the Department of Economics at Carleton University for 25 years and is well known for his contributions in the fields of macroeconomic and regional economic policy. Donor: Professor T.N. Brewis. Endowed 1981.

*Claude Brunelle Memorial Scholarship*

Awarded annually on the recommendation of the Institute of Central/East European and Russian-Area Studies to the student with the highest standing among those proceeding from the Third to the Fourth year of the undergraduate program. Donors: Family,

friends and colleagues of the late Claude Brunelle, a former student of the Institute. Endowed 1985.

*Donald William Buchanan Scholarship*

Awarded annually for general competition among students entering Carleton University. Donor: The late Donald William Buchanan. Endowed 1967.

*Building Envelope Council, Ottawa Region, Award*

Value \$250. Awarded annually, on the recommendation of the Chair of the Department of Civil and Environmental Engineering, to a graduating student in an undergraduate or graduate program of study who has demonstrated excellence in the area of building envelopes. Donor: The Building Envelope Council, Ottawa Region (BECOR). Established 1995.

*Joseph and Yvonne Bulger Scholarship in Engineering*

Two scholarships are awarded annually, on the recommendation of the Dean of Engineering, to students of high proficiency and who are Canadian citizens proceeding from one year to another of the Civil Engineering program. Preference will be given to students who attended a high school in the National Capital Region. Endowed in 1991 by friends of Joseph V. Bulger in honour of his dedication and service to the engineering and construction industry.

*Landen Dominic Burnett Memorial Award*

Value \$300. Awarded annually to an outstanding student in the Art History program. The recipient will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of faculty members of the Art History program. Donor: The Vered Foundation. Established 1979. Revised 1992.

*Dr. John Davis Burton Award*

Awarded annually, when merited, to a student in good standing enrolled in a program at Carleton University, University of Ottawa, La Cité Collégiale or Algonquin College who has made a significant contribution toward awareness, equality and integration of persons with disabilities within his/her educational community. The recipient will be chosen on the recommendation of the Assistant Director (Special Needs), Counselling and Student Life Services at Carleton University, assisted by a Selection Committee. Endowed in 1992 by students, family and friends of Dr. John Davis Burton, who was a champion and advocate for persons with disabilities throughout his career as an educator.

*The Colonel John By Award for History*

A prize awarded in alternate years to a student in a Third-year history course who writes the best paper on a topic relating to Canadian history. Preference will be given to papers concerning the National Capital Region. Donor: The Historical Society of Ottawa. Established 1990.

*Julie Bycraft Memorial Scholarship*

Value \$1000. Awarded on the recommendation of the Director of the School of Journalism and Communication to an outstanding student who is entering the First year of the Bachelor of Journalism program. Established in 1997 by family and friends to honour Julie.

*D. Roy Campbell Scholarship*

Awarded annually, under the terms of the will of the late D. Roy Campbell, for competition among students entering Carleton University with high standing in the senior matriculation examinations or the equivalent. Donor: The late D. Roy Campbell. Endowed 1962.

*Henry Campbell Scholarships*

Two scholarships awarded annually to full-time students entering or progressing from one year to the next at Carleton University. Provided from the estate of the late Edna Alice Campbell. Endowed 1978.

*The Canadian Corporate News Scholarship in Journalism*

Value \$1000. Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to an outstanding student who is proceeding from one year to another



in the Bachelor of Journalism program. Donor: Canadian Corporate News. Established in 1995 to commemorate the 50th anniversary of Carleton's first courses in journalism.

*Canadian Federation of University Women/Ottawa Scholarships*

Three named scholarships — Dr. Ruth Bell Scholarship, Carol Shields Scholarship, Naomi Rayner Scholarship — valued at \$500 each. Awarded annually to women students at Carleton University continuing in undergraduate studies who have completed the equivalent of at least 5.0 credits beyond entrance requirements at the University and have demonstrated a high potential for university studies. To be eligible, the candidate must have maintained a high academic standing and be registered as a part-time student. Donor: Canadian Federation of University Women/Ottawa. First established in 1952 in honour of Dr. Alice E. Wilson, Revised 1989, 1993, 1996.

*The Canadian Society for Chemistry Medal*

Awarded annually to the student obtaining the highest academic standing in the penultimate year in the Honours Chemistry program. Established 1950. Revised 1983, 1985, 1990.

*Canadian Society of Petroleum Geologists Undergraduate Student Award*

An award, consisting of a certificate and one-year student membership in the Canadian Society of Petroleum Geologists, is given by the society on the recommendation of the Department of Earth Sciences, to an undergraduate student who has excelled in fields relating to petroleum geology. Established 1978.

*Carleton Beaverbrook Awards for Freedom of the Press*

Value \$300. Two awards are given annually, one on the recommendation of the Chair of the Department of History to a student enrolled in a history course, and the other on the recommendation of the Director of the School of Journalism and Communication to a student enrolled in a journalism course, who respectively submit the best essays that address the topic of freedom of the press and/or the right of access to the use of this medium by individuals and organizations. A case history method study will be favoured over a generalized essay. The awards will be provided from interest generated by The John Hanson Fund. Donor: J. Carlisle Hanson, Q.C. Endowed in 1982 in honour of John Hanson, a Canadian pioneer who, during his lifetime (1793-1820), established a settlement at Chamcook Island, New Brunswick. Revised 1992.

*Carleton University Academic Staff Association Scholarship*

Value \$1,500. Awarded annually to a student of high proficiency proceeding from one year of program to another in undergraduate studies at Carleton University. Donor: Carleton University Academic Staff Association. Established 1977.

*Carleton University Awards in English*

Value \$1,000. Awarded annually to students from Ottawa area high schools. Prizes will be given in two categories. The writing award will be given for any one of the following: a play of at least 30 minutes running time; a sheaf of poems; a minimum of at least three short stories (no maximum); or a novel. The essay award will be given for an essay of a length to be determined annually by the Department. Candidates may contact the Carleton University Department of English for terms of the prizes, though information will be sent yearly to the English departments of all high schools in the area. In each category, the judges will award a first prize of \$200, a second prize of \$100 and four third prizes of \$50, unless they deem entries to be of insufficient calibre. Donor: Anonymous. Established 1981. Revised 1985.

*Carleton University Caribbean Club Award*

Value \$200. Awarded annually, if merited, on the recommendation of the Director of Student Awards, to an outstanding student who is a member of the Carleton Caribbean Club. Donor: The Carleton University Caribbean Club. Established 1991.

*Carleton University In-Course Scholarships*

These scholarships are named in honour of former Chancellors, Presidents and Chairs of the Board of Governors of Carleton Uni-

versity and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton.

*Carswell Company Book Award in Public Law*

A book prize and certificate are awarded annually to the top full-time student in the Second, Third and Fourth year of any of the undergraduate Law programs. Donor: The Carswell Company Limited. Established 1965. Revised 1987, 1992.

*Victor S. Castledine Scholarship*

Awarded annually to a student in Economics or Business who, in the opinion of the Chair of the Department of Economics in counsel, has done outstanding work in the area of money, credit and banking studies. Donor: Victor S. Castledine, Esq. Endowed 1971.

*CCH Canadian Limited Award in Taxation*

A one-year's subscription to CCH's seven-volume Canadian Tax Reports awarded annually, on the recommendation of the Department of Law, to the student achieving the highest grades in tax law courses. Donor: CCH Canadian Limited. Established 1984.

*Certified General Accountants Association of Ontario Award for Excellence*

Value \$1,000. An annual award for excellence is given on the recommendation of the Director of the School of Business to a student graduating from Carleton University who has displayed outstanding achievement in accounting. The award is composed of a cash award of \$150 plus a credit of \$850 to be drawn down as and when the successful candidate wishes, for the purpose of defraying any fees related to courses in the CGA study program. The first drawdown on the credit must be made not later than 18 months after the date of notification to the successful candidate. Thereafter, the credit will be valid as long as the person is enrolled in the CGA program in Ontario. Donor: The Certified General Accountants Association of Ontario. Established 1981. Revised 1988.

*Society of Chemical Industry Award*

A gold key with the crest of the Society of Chemical Industry in front and the name of the winner, course, year and university on back is granted to the student who has the highest standing in the final year of the Honours program in Chemistry. The winner will also receive a year's subscription to the journal, Chemistry and Industry. Donor: Canadian Section, Society of Chemical Industry. Established 1961.

*CHEZ-FM Research Award(s) in Mass Communication*

Value \$1000. Awarded annually to support the cost of Honours Research Project(s) in the Mass Communication program. The award(s) are given to project(s) on radio broadcasting and issues related to broadcast regulation generally. The recipient(s) are determined annually on the recommendation of a panel selected by the Associate Director (Mass Communication) of the School of Journalism and Communication in conjunction with the donor. Donor: CHEZ-FM Inc. Established 1984.

*CHEZ-FM Research Award in Sociology and Anthropology*

Value \$600. Awarded annually, when merited, to a Fourth-year Honours student or a graduate student enrolled in a Sociology program. The award is intended to assist with the cost of a media-related research project, essay or thesis involving quantitative research on radio broadcasting, broadcast regulation generally, or contributing to general theoretical development in media sociology. The recipient is chosen annually on the recommendation of a panel, selected by the Chair of the Department of Sociology and Anthropology, which includes a representative from CHEZ-FM Inc. Donor: CHEZ-FM Inc. Established 1989. Revised 1993.

*Chipworks Award*

Value \$500. Awarded annually, on the recommendation of the Faculty of Engineering, to a student proceeding from Third to Fourth year of the Electrical engineering program who has demonstrated excellence in the field of microelectronics. Donor: Chipworks an Ottawa based microelectronics company. Established 1996.



*CIPS Ottawa Section Scholarship*

Value \$625. Awarded annually, on the recommendation of the Director of the School of Computer Science, to a full-time undergraduate student proceeding from one year to another of the Computer Science program. The award is composed of a cash award of \$500 plus a one-year CIPS student membership and admission to regular Ottawa Section meetings. Donor: Ottawa Section of the Canadian Information Processing Society (CIPS). Established 1992.

*W.H. Collins Memorial Scholarship*

Value \$8,000 over four years, (\$2,000 per year). Awarded annually to a student entering the First year of the Geology program. This award was endowed in 1994 to commemorate W.H. Collins for his outstanding achievement in the earth sciences including the directorship of the Geological Survey of Canada from 1920-1936.

*Communications Law Prize*

Awarded annually on the recommendation of a panel comprised of selected members of faculty who specialize in communications law, for excellence in the study of broadcast, press and telecommunications law. Donor: Leonard M. Bellam. Endowed 1983.

*Scholarship in Comparative Economics*

Awarded annually, if merited, on the recommendation of the Department of Economics, to an undergraduate or graduate student who has shown aptitude in the field of comparative economics. Established by Professor Richard Carson in memory of his parents, Robert L. and LeVerne N. Carson. Endowed 1991.

*Duchess of Connaught Scholarship*

The yield from the endowment of this historic scholarship has been made available to Carleton University by the Laurentian Chapter, I.O.D.E. The scholarship is to be awarded to an able student entering Carleton University, and may be held until graduation if merited, at which time a new award will be made. Donor: Laurentian Chapter I.O.D.E. Endowed at Carleton University 1960.

*Consulting Engineers of Ontario Scholarship*

Value \$500. Awarded annually, on the recommendation of the Dean of Engineering, to an outstanding student proceeding from Third to Fourth year of an Engineering program. Donor: Consulting Engineers of Ontario (CEO). Established 1991.

*Naomi Cook Scholarship Fund*

Awarded annually to students with high academic standing entering Carleton University. Donor: The late Naomi Cook. Endowed 1967.

*Michael Russell Coote Memorial Award*

Awarded annually, on the recommendation of the Director of the School of Architecture, to a promising student who has successfully completed First year in the School of Architecture. Donors: Friends, family and colleagues of the late Michael R. Coote. Endowed 1983 in memory of Michael R. Coote, a member of the faculty since 1970 and Director of the School of Architecture from 1978 to 1982.

*Jamie Corbet Memorial Award*

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding student who is proceeding from one year to another in the School of Computer Science. Donor: Friends and family of the late Jamie Corbet. Endowed 1981.

*Coulson Memorial Scholarship*

Awarded annually, on the recommendation of the Chair of the Department of Classics, to an undergraduate student proceeding from one year to another of a Classics program. This award was endowed in 1990 in memory of Maria Pia Coulson and Tom Hunter Coulson. Donor: The estate of Louisa Gallo.

*Jennie Shibley Cramm Scholarship*

Awarded annually to a female student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

*W.H. Cramm Scholarship*

Awarded annually to a male student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

*CSME Gold Medal*

Awarded annually, on the recommendation of the Dean of Engineering, to a graduating student in the Mechanical Engineering program for outstanding achievement. Donor: The Canadian Society for Mechanical Engineering. Established 1988.

*Catherine Daumery Memorial Award for Botanical Collection*

Value \$50, together with a book prize. Awarded annually, if merited on the recommendation of the Department of Biology, to a student who has submitted by November 1, an outstanding collection of mounted and identified flowering plants. Donor: Anonymous. Established 1953.

*Bertha F. Davis Award in Religion*

Awarded annually to an outstanding student enrolled in the B.A. or Honours program in the Department of Religion at Carleton University. Donor: Bertha Florence Davis. Endowed 1977.

*W.R. Davis Engineering Scholarship*

Value \$1,000. Awarded annually, on the recommendation of the Faculty of Engineering, to an outstanding student entering the Fourth year of the Electrical or Mechanical Engineering program. Donor: W.R. Davis Engineering Ltd. Established 1988.

*Deloitte & Touche Scholarships*

Two scholarships valued at \$500 each. Awarded annually to the two students in the School of Business who have attained the highest overall average in the First and Second year of the Business program and are proceeding in the accounting stream. Donor: Deloitte & Touche. Established 1962. Revised 1990.

*Director's Award in Environmental Science*

Value \$200. Awarded annually to a student graduating from the Environmental Science program with outstanding academic achievement. Established 1997.

*Josef Dlouhy Memorial Scholarship in Chemistry*

Awarded annually, when merited, on the recommendation of the Department of Chemistry to a student proceeding from First to Second year of an Honours program in Chemistry, Biochemistry or any Combined Honours program in Chemistry. Preference will be given to a student intending to study inorganic or analytical chemistry. Endowed in 1997 by Dr. Joseph Dlouhy in honour and memory of his father, Josef Dlouhy.

*Dobbie Regional Entrance Scholarships*

Scholarships will be available for students entering Carleton University, to be divided equally among students from Ontario (except for the City of Ottawa), the Western provinces and the Territories, and Quebec and the Atlantic provinces. Donor: The late Jemema Grace Dobbie. Endowed 1967.

*The Al Donaldson Award in Precambrian Geology*

Awarded annually, when merited, to provide support for a student engaged in field-based B.Sc. thesis research in Precambrian terrains of Canada. Proposals for research on fundamental unsolved problems will be given preference. Ontario students with demonstrable financial need are eligible to apply. Recipients will be chosen by the Precambrian Research Awards Committee, from applications submitted to the Chairman of the Department of Earth Sciences. Endowed by Professor Donaldson in 1996, the year of his retirement from full-time teaching at Carleton University, to encourage continuation of research in his principal area of geological research.

*Lord Dundonald Chapter, I.O.D.E. Scholarship*

Value \$200. Awarded annually to a student of superior standing and general proficiency, entering the final year of a degree program at Carleton University. Donor: Lord Dundonald Chapter, I.O.D.E. Established 1956.



*Economics Scholarship*

Value \$750. Awarded to the student or students entering the final year of the Honours program of studies, whose record of scholarship, in the opinion of the Department of Economics Scholarship Committee, merits special recognition. Established 1978.

*Samuel L. Edelson Scholarship*

Value \$250. Awarded annually to an outstanding student who is proceeding from one year of program to another at Carleton University. Donor: Members of the family. Established 1974.

*Wilfrid Eggleston Award in Journalism*

Value \$500. Awarded to the undergraduate with the best record in the Second-year Journalism Degree program. This award is named in honour of the late Dr. Wilfrid Eggleston, former Director of the School of Journalism. Donor: Anonymous. Established 1967.

*Elizabeth's Award in Family Law*

Value \$300. Awarded annually, on the recommendation of the Chair of the Department of Law, to the full-time undergraduate student standing highest in a course devoted to law of the family. Donor: V.M. Trudeau. Established 1989.

*Michael Elmarson Memorial Award*

Awarded annually, when merited, on the recommendation of the Director of the School of Industrial Design, to a student in the Industrial Design program who has demonstrated an outstanding environmental awareness in an undergraduate Industrial Design project. Established by students and staff in memory of Michael Elmarson, a Carleton Industrial Design student. Endowed 1991.

*Dr. Reginald T. Elworthy Award in Chemistry*

Awarded annually, on the recommendation of the Chair of the Department of Chemistry, to an outstanding student in Second year Physical Chemistry who is continuing in the Honours Chemistry program. Endowed 1987.

*Engineering Institute of Canada Award*

Awarded annually, on the recommendation of the Faculty of Engineering, to a Canadian citizen or permanent resident of high proficiency who is proceeding from First to Second year of the Engineering program. Donor: Ottawa Chapter of the Engineering Institute of Canada. Endowed 1989.

*Enrichment Mini-Course Scholarship*

Value \$500. Awarded annually, to two students who have participated in a Carleton University Enrichment Mini-Course prior to entering the First year of a program at Carleton University. The scholarships shall be given to the two candidates who have the highest scholastic standing of all candidates who are eligible for this award. Established in 1990 to commemorate the 10th Anniversary of the Enrichment Mini-Course Program. Donor: School of Continuing Education.

*Ernst & Young Award*

Value \$250. Awarded annually to the student with the highest standing in the First year of the Business program. Donor: Ernst & Young, formerly Clarkson, Gordon & Company. Established in 1962. Revised 1989.

*Lil Fallis Scholarship*

An award (or awards) given on the recommendation of the Director of the School of Business for excellence in the study of accounting and/or finance. Donor: Anonymous. Endowed 1980. Revised 1990.

*Bob Farquharson Memorial Award in Journalism*

Awarded annually to an outstanding student enrolled in a full-time undergraduate program in the School of Journalism and Communication at Carleton University. Preference will be given to a Third-year student who has indicated an interest in pursuing a career in newspaper and magazine journalism. Donors: Canadian Managing Editors Conference and the Toronto Globe and Mail. Endowed 1980.

*The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Entrance Scholarship*

Annual entrance scholarship of \$750. Awarded to a student entering the First year of the School of Architecture. The award is based on academic achievement and financial need. Established 1987.

*The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship*

Annual award of \$250, in the School of Journalism, to an outstanding student in a course devoted to problems of the mass media. Established 1986.

*The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship*

Annual award of \$250, in the School of Architecture, to an outstanding student in a course devoted to energy and form and related workshop. Established 1986.

*Fitzroy Township Historical Society Scholarship*

Awarded annually, when merited, on the recommendation of the Chair of the Department of History, to an outstanding student proceeding from Third to Fourth year of the Honours History program. Donor: The Fitzroy Township Historical Society. Endowed 1991.

*E. Alison Flood Award in Physical Chemistry*

Awarded annually, on the recommendation of the Chair of the Department of Chemistry, to a student who shows promise in the area of physical chemistry. Preference will be given to an outstanding student in the Second year physical chemistry course who is proceeding to the Third year of a Science program. Donors: Friends and former students of the late Dr. E.A. Flood, a principal scientist at the National Research Council, who in 1969 became a senior demonstrator in the Department of Chemistry. Endowed 1980. Revised 1988.

*Lilian I. Found Award for Poetry*

Offered annually for the best lyric of 50 lines or less submitted by an undergraduate of Carleton University by March 15. Details may be obtained from the Department of English. Donor: The late Mrs. Lilian I. Found. Endowed 1950.

*Awards of the Embassy of France*

For excellence in the study of French, two book awards are offered annually by the Embassy of France in Canada. Donor: Embassy of France. Established 1978.

*Blair Fraser Memorial Award for Journalism Graduates*

Offered annually to a Journalism student in his or her graduating year who, in the opinion of a board of selection, shows a marked aptitude for and interest in political reporting at the national and international level. Endowed 1969 in memory of Blair Fraser, Ottawa editor of *Maclean's Magazine*, by a group of his friends.

*Jacob Freedman Scholarships*

Awarded annually to outstanding students who are proceeding from one year of program to another at Carleton University. Donor: The late Jacob Freedman. Endowed 1967.

*Department of French Scholarship*

Value \$200. Awarded annually to an outstanding student entering Second or Third year in a Major or Honours program in French. Donors: Members of the Department of French. Established 1984.

*Friends of Carleton Scholarships*

Scholarships have been provided for general competition among students entering Carleton University at the senior matriculation level. Donor: The Friends of Carleton University. Established 1967.

*Fulcrum Technologies Inc. Scholarship*

Value \$750. Awarded annually, on the recommendation of the Director of the School of Computer Science, to an outstanding full-time student proceeding from Third to Fourth year of the Computer Science program. Donor: Fulcrum Technologies Inc. Established 1993.



*GAC-MAC Undergraduate Scholarship in Earth Sciences*

Awarded annually, on the recommendation of the Chair of the Department of Earth Sciences, to a deserving student who is proceeding from one year to another in the Honours Geology program. This scholarship was endowed in 1988 by the Geological Association of Canada and the Mineralogical Association of Canada in recognition of the support provided by undergraduate students when Carleton University hosted the "Ottawa 86" Annual Meeting.

*Randall Geehan Memorial Scholarship in Quantitative Economics*

Awarded annually, on the recommendation of the Chair of the Department of Economics, to a deserving Fourth-year Honours student or graduate student, whose studies emphasize quantitative work in economics. Endowed in 1990 by colleagues, family and friends in memory of Dr. Randall Geehan, who was a professor in the Department of Economics.

*Awards of the Embassy of the Federal Republic of Germany*

For excellence in the study of German, book awards are offered annually by the Embassy of the Federal Republic of Germany in Canada. Established 1955.

*Irwin Gillespie Award in Economics*

Awarded annually to undergraduate students who are registered in a program in the Department of Economics and who are in need of financial assistance. Endowed in 1997 by Irwin Gillespie, a member of the Department of Economics from 1964 to 1997, and friends.

*Carl Gillis Memorial Award*

Awarded annually, when merited, on the recommendation of the Carleton University Students' Association (CUSA), to an undergraduate student from Atlantic Canada who has demonstrated outstanding achievement in student, community, or national affairs and has maintained good academic standing. Endowed in 1996 by family and friends of Carl Gillis, B.A. 1992. Carl was a former CUSA Vice President and National Chair of the Canadian Federation of Students.

*Glengarry Book Prize*

Value \$150 gift certificate redeemable at the Carleton University Bookstore. Awarded annually by the Department of Housing and Food Services to the residence student enrolled in full-time undergraduate studies who has achieved the highest GPA among residence students returning from the previous year, and who is not currently in receipt of another academic award from the University. Donor: Former Students of Glengarry House. Endowed 1983. Revised 1991.

*Richard Glover Scholarship*

Awarded annually, on the recommendation of the Department of History, to an outstanding student entering the Fourth year of the Honours History program. Endowed 1986.

*Goldblatt Scholarship in Journalism*

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to a graduating student in the Bachelor of Journalism program who excels in the study of reporting on Canadian government and politics. Funded by the estate and friends of Murray Goldblatt, who shared his experience and passion for the media as a professor at Carleton for 19 years. Established 1996.

*Golder Associates Award*

Value \$500. Awarded annually, when merited, on the recommendation of the Chair of the Department of Civil and Environmental Engineering, to the student submitting the best Fourth-year civil engineering final project in the area of geo-environmental studies. Donor: Golder Associates Ltd. Established 1991.

*Louis and Miriam Goldstein Book Award in Judaic Studies*

Awarded annually to a deserving Carleton University student in Judaic studies, on the recommendation of the Department of Religion.

Donors: Louis and Miriam Goldstein. Established in 1983 in honour of Carleton University's Fortieth Anniversary.

*Mr. and Mrs. Louis L. Goldstein Book Award in Law*

Awarded annually to a deserving Carleton University student in a Law program, on the recommendation of the Chair of the department. Donors: Mr. and Mrs. Louis L. Goldstein. Established 1975.

*Marisa Ann Golini Memorial Scholarship in Journalism*

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to one or more deserving students showing exceptional ability in investigative reporting, community service and humanitarian interests who is proceeding from one year to the next in the Bachelor of Journalism program. Endowed in 1995 by Alfio and Esther Golini, parents of Marisa Ann Golini, a 1985 Carleton Journalism graduate, and former news director of radio station CKQB-FM The Bear.

*Krishnakumar Gopalan Memorial Award*

Awarded annually to the Fourth-year student standing highest in the Mechanical Engineering program. Established in memory of Krishnakumar Gopalan, the top graduating student of the class of 1985 in the Mechanical Engineering program, who lost his life tragically within days of graduation. Donor: Friends of the late Krishnakumar Gopalan. Endowed 1985.

*Margaret Graham Award*

Value \$300. Awarded annually to the undergraduate student with the best overall academic average proceeding from Third to Fourth year of the Bachelor of Journalism program. This award is named in honour of Margaret Graham, who was one of the founding members of the Canadian Women's Press Club in 1904. Donor: The Media Club (Ottawa Branch). Established 1977.

*Ian H. Griffith Memorial Scholarships*

Awarded annually, if merited, to outstanding students proceeding from one year to another of a degree program in the Faculty of Science, preferably in the Integrated Science Studies program, and having some appreciation of the humanities. Donors: Mr. and Mrs. J. Griffith in memory of their son Ian H. Griffith, B.Sc., Carleton 1976.

*Simon Guest Memorial Book Prize*

Awarded annually, on the recommendation of the Chair of the Department of Earth Sciences, to a Fourth-year Honours Geology student. Endowed in 1988 by friends, family, the Geology Graduate Society and the Department of Earth Sciences in memory of Simon Guest, a Third-year geochemistry student who died tragically in the summer of 1988.

*Peter Gerard Harris Memorial Award*

Awarded annually on the recommendation of the School of Journalism and Communication to an outstanding student in the Third year of the Mass Communication program. Endowed 1985 by the family and friends of Peter G. Harris, a Carleton student who was named to the Deans' Honour List in June 1984, and who died tragically two months later.

*Trevor A. Harwood Memorial Award*

Awarded annually, on the recommendation of the Chair of the Department of Physics, to a promising student in need of assistance who is proceeding from one year to another in the combined Honours Geology and Physics program. Donor Anonymous. Endowed 1987.

*Andrew S. Haydon Scholarship*

Awarded annually to a student from a high school in the Regional Municipality of Ottawa-Carleton who is entering the Electrical or Systems and Computer Engineering program or the Computer Science program. Endowed in 1992 by business associates and friends of Andrew (Andy) Haydon in acknowledgement of 25 years of service to Ottawa-Carleton, and in recognition of his commitment to the future.

*E.P. (Ted) Hincks Memorial Scholarship in Physics*

Awarded annually, on the recommendation of the Department of Physics, to a student showing high proficiency in Physics and pro-



ceeding from one year to another of a full-time undergraduate program in Physics or in Physics and an allied discipline. Established in 1984 in memory of the late Professor E.P. (Ted) Hincks, D.Sc. (Carleton), F.R.S.C., former Chair of the Department of Physics and a pioneer in the area of high-energy physics.

*E.P. Hincks Award of the Institute of Particle Physics*

Value \$750. Awarded annually on the recommendation of the Department of Physics to an outstanding student in an Honours, Combined Honours, or Double Honours program in Physics at Carleton University. Donor: The Institute of Particle Physics. Established in 1984 in honour of the Institute's founding President, E.P. (Ted) Hincks, D.Sc., F.R.S.C. The late Professor Hincks played a seminal role in the development of high-energy physics in Canada and was a Chair of the Department of Physics at Carleton University. Revised 1987.

*Rosemarie Hoey Award in English*

Awarded annually, on the recommendation of the Chair of the Department of English, to a student in the First year of the English B.A. or Honours program for outstanding academic achievement in English 18.162. Established 1995.

*J.M. Holmes Entrance Scholarship in Chemistry*

Awarded annually on the recommendation of the Department of Chemistry to a student entering First-year Honours Chemistry. This award was endowed in 1986 to commemorate Professor Holmes' long association with high school and First-year students.

*Professor James M. Holmes Scholarship in Chemistry*

Awarded annually to an outstanding student proceeding from the Second to the Third year of an Honours Chemistry program. Donors: Friends and former students of Professor James M. Holmes. Endowed 1984.

*Janet M. Holmes Memorial Scholarship*

Value \$300. Awarded annually, when merited, to a promising student proceeding from the Third to the Fourth year of the Honours Chemistry program at Carleton University. Candidates will be selected by the Department of Chemistry. Donors: Professor and Mrs. J.M. Holmes. Established July 1973.

*C.V. Hotson Memorial Scholarship*

Awarded annually to an undergraduate student who maintains high academic standing and is active in student affairs. Donated by Carleton alumni and other friends in memory of Mr. Hotson, a 1950 Carleton Journalism graduate and former member of the Students' Council who returned to Carleton in 1953 to become Administrative Assistant to the President, and Executive Secretary of the Alumni Association, a position he held until his death in October, 1960.

*Sara Helen Parry Hughes Travel Award*

Awarded at the discretion of the Department of Spanish to a good student taking the Department's Winter Program Abroad, to assist with his or her travel cost. Given in memory of Sara Hughes, a gifted student in Spanish who was tragically killed in an accident at Gravenhurst, August 1984. The gift of her family and friends, 1984.

*Award of the High Commission of India*

For excellence in the study of Sanskrit, a book award is offered annually by the High Commission of India. Established 1976.

*International House Award*

Awarded to a student in his or her graduating year attending Carleton University on a student visa who, in addition to maintaining the academic levels of the degree program, has been an active participant in extracurricular activities in the University. Donor: International House. Endowed 1972.

*Allama Mohammad Iqbal Award*

Awarded annually on the recommendation of the Department of Religion to an undergraduate student who has shown excellence in the field of Islamic studies. Donor: The Government of Pakistan. Endowed 1982.

*Award of the Embassy of Italy*

For excellence in the study of Italian, a book award is offered annually by the Embassy of Italy in Canada. Established 1971.

*Mitch Jacobson Memorial Award in Photojournalism*

Awarded annually to the student who, in the opinion of a selection committee appointed by the Director, is the best photojournalist in the School of Journalism and Communication. Donors: Friends of Mitch Jacobson. Established 1986.

*Pauline Jewett Awards*

Awarded annually to students entering a program at Carleton University from a high school in Canada. Established in 1990 by Pauline Jewett, a faculty member at Carleton from 1955 to 1972 and Director of the Institute of Canadian Studies. She was a Member of Parliament for two-and-a-half years in the mid-sixties and from 1979 to 1988. Dr. Jewett was Chancellor of Carleton University from 1990 to 1992.

*Judith Johansen Memorial Award*

Awarded annually on the recommendation of the School of Journalism and Communication to the Third-year Journalism student who submits the best series of interpretative reports during the academic year. Endowed in 1982 by friends, fellow students and teachers of Judith Johansen, B.J. 1970 and candidate for the degree of M.J.

*George Johnston Poetry Award*

Awarded annually, on the recommendation of the Chair of the Department of English, to the full or part-time student who submits the best poetry manuscript that particular year. Established in 1992, by members of the Department of English, in honour of Professor George Johnston, a distinguished poet and founding member of the Department of English.

*Journalism Writing Style Book Award*

Awarded annually as a book prize to a Journalism student, the writing style of whose class assignments shows exceptional merit. Donor: Anonymous. Endowed 1970.

*Dr. Harry Katznelson Memorial Scholarship*

Value \$100. Awarded annually to an outstanding student proceeding into an advanced year in the Honours Biology program. Donors: Friends of the late Dr. Harry Katznelson, B.S.A., M.Sc., Ph.D., F.R.S.C., Director of the Microbiology Research Institute, Federal Department of Agriculture. Established 1965.

*Eldon Kaye Memorial Scholarship*

Awarded annually, on the recommendation of the Chair of the Department of French, to an undergraduate or graduate student in the French program who has demonstrated the most promise in French literature. Endowed in 1989 in memory of Eldon Kaye, who was a professor in the Department of French.

*Kipling Award*

Value \$1000. Awarded annually, on the recommendation of the Dean of Engineering, to a student graduating from the Engineering program who has demonstrated leadership ability and service to the engineering profession and/or the University community. The recipient is to be a Canadian citizen or permanent resident of Canada. Donor: Camp 12 of the Ritual of the Calling of an Engineer. Established 1986.

*KPMG Scholarship*

Value \$825. Awarded annually to the Third-year Business student standing highest in the Commerce program. Donor: KPMG. Established 1969. Revised 1987, 1989, 1990, 1997.

*Marston LaFrance Memorial Award in English*

Awarded annually, if merited, on the recommendation of the Department of English to outstanding student(s) entering the Fourth year of the Honours English program at Carleton University. Endowed 1976 in memory of the late Dr. Marston LaFrance, former Dean of the Faculty of Arts, Division I.



*Charles Lazarus Scholarship*

Awarded annually on the recommendation of the School of Journalism to a First-year Journalism student showing all-round academic excellence. Endowed in 1985 by the family of Charles Lazarus, in his honour.

*Francis C.C. Lynch Scholarships*

Scholarships have been established for open competition among students entering or proceeding from one year to another in Arts, Social Sciences, Science, Business, Journalism, Engineering or Architecture. Donor: The late Francis C.C. Lynch. Endowed 1967.

*George A. Lynn Memorial Scholarship*

Awarded annually on the recommendation of a jury appointed by the Director of the School of Industrial Design, for excellence in the design of medical equipment. Donors: The friends and family of the late George A. Lynn. Professor Lynn was a well known Canadian industrial designer who, as one of the first Professors of Industrial Design, was a member of the faculty from 1975 until his untimely death in 1983. Endowed 1984.

*David Carton MacDonald Memorial Award*

Value \$300. Awarded annually, on the recommendation of the Chair of the Department of English Language and Literature, to the student with highest standing in the graduating class in Honours English who has a special interest in modern literature. Established 1987 in memory of David Carton MacDonald.

*W.P. MacDonald Memorial Scholarship in Accounting*

Awarded annually, on the recommendation of the Director of the School of Business, for proficiency in the study of accounting to an outstanding student who is proceeding from one year to the next in the Bachelor of Commerce program. Endowed in 1995 by the family of W.P. MacDonald.

*Macdonald Club Awards in Music*

Value \$500 each. Awarded annually to two outstanding students in the B.A. or Honours program in Music who have demonstrated a special interest in the creative arts. The recipients will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of faculty members of the Music program. Donor: The Macdonald Club, a private club created to support and encourage the creative arts. Established 1981. Revised 1989, 1992.

*Gavin Scott Macfarlane Memorial Scholarship*

Awarded annually to an outstanding student, preferably in Honours, who is proceeding from one year of program to another at Carleton University. First donated in 1957 by Mrs. G.S. Macfarlane in memory of her husband, Lieutenant-Colonel Gavin Scott Macfarlane.

*R.A. MacKay Award in Political Science*

Awarded annually by the Department of Political Science to a student in good standing in accordance with terms that the Department may from time to time establish. Donor: The late Dr. R.A. MacKay. Endowed 1977.

*Department of Mathematics and Statistics Entrance Award*

One or more annual awards for a student or students entering the First year of an Honours or Major program in the Department of Mathematics and Statistics at Carleton University. The selection of the recipient or recipients will be based on the results of an annual Competition for High School students, with the decision being recommended by the Chair of the Department in consultation with the Director of Student Awards and the Department's High School Liaison Committee. Donors: Members of the faculty in the Department of Mathematics and Statistics. Established 1973.

*Jeannette Matthey Memorial Scholarship*

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to a student proceeding from Third to Fourth year of the Journalism program who shows promise as a future radio journalist. Donors: Friends and colleagues of Jeannette Matthey, a former Carleton journalism student and an award-winning radio journalist with the CBC. Endowed 1993.

*Roderick C. McDonald Memorial Scholarship in Engineering*

Value \$300. Awarded annually to an Engineering student of high proficiency entering the Fourth year of program. Established by the University in memory of the late Roderick C. McDonald who, before his death in 1961, was a member of the Faculty of Engineering.

*R.L. McDougall Award in English*

Awarded annually to an outstanding student in the B.A. or Honours program in English. This award was established by friends, family and colleagues of Rob McDougall in recognition of his 25 years of service as a distinguished member of the Department of English and especially for his contribution as teacher, scholar and administrator in the field of Canadian studies. Endowed 1983.

*McGregor Easson Scholarship*

Awarded annually, to an outstanding student proceeding from one year to another of a full-time undergraduate program in the Arts or Social Sciences. Donor: The late Leah Easson. Endowed 1989.

*Margaret McIrvine Scholarship*

Awarded annually to outstanding students proceeding from one year of program to another in the School of Business. These scholarships are provided through the bequest of the late Margaret McIrvine, a public servant for many years who was actively involved in women's issues. Endowed 1991.

*D.F. McKechnie Award in Accounting*

A book prize awarded, when merited, to a student in Business for proficiency in the study of accounting. Donor: D.F. McKechnie, C.A. Endowed 1951.

*Violet McLaughlin Scholarship*

Awarded annually to students entering or proceeding from one year to another at Carleton University. This fund was given by the late Violet McLaughlin, a resident of Ottawa, in memory of St. Patrick's College. Endowed 1984.

*McNaughton Scholarship*

The sum equal to tuition fees is awarded annually to a student entering the Fourth year of the Engineering program who has demonstrated a previous commitment to the McNaughton Centre and related IEEE activities. Established in honour of the late General Andrew G.L. McNaughton, scientist, soldier, politician, diplomat, and the inventor of the cathode-ray direction finder. The selection of the recipient will be made by the Faculty of Engineering. Donor: International Electrical, Electronics Conference (IEEC), Inc. Established 1985. Revised 1989.

*Luigi Mion Scholarship in Engineering*

Awarded annually, when merited, on the recommendation of the Dean of Engineering, to a student proceeding from one year to another of the undergraduate Civil Engineering program who has shown an interest in design or technological research in reinforced concrete. Donor: Luigi Mion, an Ottawa businessman involved in the manufacture of precast concrete products, who was a recipient of a 1992 Canada Award for Business Excellence. Endowed 1994.

*Dr. Frederick William Charles Mohr Scholarships*

Scholarships have been made available for annual competition among students entering Carleton University or proceeding from one year of program to another and who come from communities within the following Ontario and Quebec counties: Ontario: Renfrew, Russell, Prescott, Glengarry, Stormont, Dundas, Grenville, Carleton, Lanark, Nipissing, Leeds; Quebec: Pontiac, Gatineau, Hull, Papineau, Argenteuil, Temiskaming. These awards are provided through the bequest of the late Dr. F.W.C. Mohr. Donor: The Frederick W.C. Mohr Estate. Endowed 1963.

*Music Award*

For the encouragement of a student displaying early excellence in music studies, an award is offered annually to the student registered in a Music program who has achieved the highest standing



in the first 2.5 music credits. Donor: Anonymous. Endowed 1983. Revised 1992.

*Jayashree A. Nagpur Memorial Award*

Value \$100. Awarded annually on the recommendation of the Department of English to an outstanding student in the English program at Carleton University. Donor: Anant L. Nagpur. Established 1976.

*National Capital Harvard Business School Alumni Club Book Prize*

A contemporary book published by the Harvard Business School and a certificate are awarded annually, on the recommendation of the Dean of the Faculty of Engineering and the Directors of the respective schools, to an outstanding student proceeding from Second to Third year in each of the following areas: the Faculty of Engineering, Schools of Business, Computer Science and Journalism and Communication. Donor: National Capital Harvard Business School Alumni Club. Established 1991.

*Betty Nesbitt Memorial Award in Biology*

Awarded annually to a student entering the Third year of a Bachelor's Degree program in Biology, who, in the opinion of the Department has shown exceptional promise in the field of biology. Preference will be given to a student in a faculty other than the Faculty of Science. Donors: Friends of the late Mrs. H.H.J. Nesbitt. Endowed 1976.

*H.H.J. Nesbitt Scholarship in Biology*

Value \$150. Awarded annually to an outstanding student proceeding from the Third to Fourth year of the Honours program in Biology at Carleton University. Established 1951, in memory of Mr. and Mrs. T.E. Clendinnen, by their daughter.

*Barrington Nevitt Memorial Award*

Awarded annually when merited, on the recommendation of the Director of the School of Industrial Design, for excellence in the Industrial Design Seminar. Established in 1995 by Jacques Giard and Mercedes Ballem in memory of Barrington Nevitt, a well known communications expert and a regular contributor to the Industrial Design Seminar.

*Marjorie Nichols Memorial Award*

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to a graduating student in the Bachelor of Journalism program who shows exceptional promise as a future journalist. Preference will be given to a female candidate. Donors: Friends and colleagues of Marjorie Nichols, a highly respected journalist who was a political reporter for nearly 25 years. Endowed 1992.

*James Nolan Memorial Award*

Awarded annually to a student in Business, for proficiency in the study of accounting. Donors: The family and friends of the late James P. Nolan, B.Com. Carleton 1977. Endowed 1977.

*F.K. North Award in Geology*

A book is awarded annually, on the basis of outstanding performance, to a student in final year of the Honours Geology program at Carleton University. This award was provided by friends and colleagues of Ken North, in recognition of his 19 years of service as a renowned teacher of geology at Carleton University, and in particular recognition of his timely and articulate statements that led to careful re-evaluation of Canada's petroleum reserves. Donors: Friends and colleagues of Dr. North. Endowed 1981.

*Dr. Iain Ogle Memorial Scholarship*

Awarded annually, on the recommendation of the Chair of Earth Sciences, to an outstanding student who is proceeding from one year to another of a Geology program. Endowed 1993 by friends of Dr. Iain Ogle.

*Ontario Association of Architects Awards*

Value \$2,400. Awarded annually to a deserving student enrolled in the Second year of the School of Architecture program an award of \$1,200; and to a deserving student enrolled in the Third

year of the School of Architecture program an award of \$1,200. Donor: Ontario Association of Architects. Established 1972.

*Ontario Hydro Engineering Award*

Value \$2,400. Awarded annually, when merited, on the recommendation of the Dean of Engineering, to a student proceeding from First to Second year of the Engineering program who is specializing in electrical, mechanical or environmental engineering. Donor: Ontario Hydro. Established 1986. Revised 1987, 1988, 1995.

*Ontario Professional Engineers Foundation for Education Entrance Scholarships*

Value \$1,200. Two scholarships are awarded annually to students of high proficiency who are entering the Engineering program at Carleton University from high school. Donor: The Ontario Professional Engineers Foundation for Education. Established 1961. Revised 1989, 1991, 1994.

*Ontario Professional Engineers Foundation for Education Scholarships*

Value \$600 each. Four scholarships are awarded annually to Engineering students of high proficiency proceeding from one year of program to another in Carleton University. Donor: The Ontario Professional Engineers Foundation for Education. Established 1961. Revised 1989, 1991, 1994.

*Bettina Oppenheimer Memorial Scholarship in Music*

Awarded annually to an academically outstanding student within 6.0 credits of completion of the Bachelor of Music degree. The recipient will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of the faculty members of the Music program. Donor: E.M. Oppenheimer. Endowed 1982. Revised 1992.

*Ordine Italo-Canadese Scholarship*

Value \$500. Awarded annually, on the recommendation of the Department of Italian, to a Canadian citizen or permanent resident who is proceeding from one year to another in a full-time program in Italian (B.A. or Honours) and who has shown high proficiency and interest in the study of Italian. Donor: Ordine Italo-Canadese. Established 1988.

*Robert E. Osborne Award*

Awarded annually, on the recommendation of the Chair of the Department of Religion, to an undergraduate or graduate student in the Religion program. Preference, in order, will be given in the areas of New Testament, Biblical and other forms of religious studies. Endowed 1986 in memory of Robert E. Osborne, who was a professor in the Department of Religion.

*The Osgoode Society Legal History Book Prize*

Two books awarded annually, on the recommendation of the Chair of the Department of Law, to a student who merits special recognition for work in legal history. Donor: The Osgoode Society. Established 1993.

*Ottawa Citizen Scholarship*

Value \$1,500. Awarded annually to a full-time student proceeding from First to Second year of a degree program who comes from a community within eastern Ontario or western Quebec. The selection will be made on the basis of high academic standing and community involvement. Donor: The Ottawa Citizen. Established 1955. Revised 1997.

*Ottawa Citizen Scholarship in Journalism*

Value \$1,500. Awarded annually to the top full-time undergraduate student proceeding from Third to Fourth year of the Journalism program. Donor: The Ottawa Citizen. Established 1969. Revised 1997.

*Ottawa Film Society Scholarship for Film Studies*

Awarded annually to an outstanding student (or students) entering the Fourth year of the Film Studies Honours program. The recipient will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of faculty members of the Film Studies program. Donor: Ottawa Film Society/Ciné-club d'Ottawa. Endowed 1994.



*Ottawa Hydro Entrance Scholarships*

Value \$1000. Two scholarships are awarded annually, one to a student entering the Electrical Engineering program and one to a student entering the Computer Science program from an Ottawa or Vanier High School. Established in 1990 to commemorate the 75th anniversary of Ottawa Hydro. Donor: Ottawa Hydro.

*Ottawa Ladies' College Scholarships*

Provided for annual competition among undergraduates for the various disciplines. Endowed 1967.

*Ottawa Women's Canadian Club Scholarship*

Awarded to an outstanding student who is a Canadian citizen proceeding from one year of program to another of the undergraduate Canadian Studies program. Endowed 1946. Revised 1977, 1983.

*Oxford University Press Award in Law*

A prize of a copy of the *Oxford Companion to Law* awarded annually, on the recommendation of the Department of Law, to a deserving student pursuing the study of law at Carleton. Donor: Oxford University Press. Established 1984.

*The Page and Steele School of Architecture Scholarship*

Value \$200. Awarded annually to an outstanding student enrolled in the School of Architecture at Carleton University. Donor: Page and Steele Architects. Established 1967. Revised 1992.

*Dr. C. Stewart Parsons Scholarship in Engineering*

Awarded annually to an entering or continuing student in the Faculty of Engineering. Endowed 1984 by Mrs. C.S. Parsons in memory of her husband, a former Director of the Bureau of Mines.

*Charles and Helen Pattenson Scholarships*

Awarded annually to students entering Carleton University who have demonstrated a high potential for university studies. Mr. Pattenson was engaged in engineering research and development in the Radio and Electrical Engineering Laboratories of the National Research Council, Ottawa, Canada, from 1940 to his retirement in 1976. Donors: The late Charles F. and Helen M. Pattenson. Endowed 1980.

*Stewart G. Paul Memorial Award*

Awarded annually, on the recommendation of the Director of the School of Business, to a deserving student continuing in the Commerce program. Preference will be given to a disabled student. Established in 1992 in memory of Stewart G. Paul by his wife and children. Mr. Paul enjoyed a successful career in business in Ottawa and throughout Canada. Endowed 1992.

*Ottawa Section of the Petroleum Society of CIM Annual Award*

Value \$500. Awarded annually, when merited, on the recommendation of the Chair of the Department of Earth Sciences, to a Canadian citizen or permanent resident proceeding to the Third or Fourth year of a degree program in Science or Engineering. Preference will be given to a student who has demonstrated an interest in the petroleum industry. Donor: Ottawa Section of the Petroleum Society of CIM (a constituent Society of the Canadian Institute of Mining and Metallurgy). Established 1987.

*The Robert Pickard Scholarship in Environmental Engineering*

Awarded annually, when merited, on the recommendation of the Dean of Engineering, to an outstanding full-time student proceeding from Third to Fourth year of the Engineering program who has demonstrated an interest in problems in environmental engineering. Preference will be given to candidates who attended a high school within the Regional Municipality of Ottawa-Carleton, and have shown an interest in municipal engineering. Endowed in 1990 by colleagues, friends and family of Robert Pickard, Eng. Cert. 1953, Commissioner of Environmental Services (retired) for the Regional Municipality of Ottawa-Carleton.

*Charles Pinhey Award*

Awarded to a student entering the First year of Business at Carleton University from a secondary school in the Regional Municipality of Ottawa-Carleton. The sum of \$300 will be awarded in the student's First year, and \$200 for each succeeding year provided

the student is registered as a full-time student at Carleton University and maintains scholarship levels in the Business program. This award is based on high academic performance and on financial need. Donor: The Ottawa-Carleton Board of Trade. Established 1974.

*Pratt & Whitney Canada (Undergraduate) Scholarships*

Value \$1,500 each. Awarded annually, when merited, on the recommendation of the Department of Mechanical and Aerospace Engineering, to two students of high academic standing who are specializing in gas turbine technology and who are proceeding from Third to Fourth year of the program. Established 1996.

*Prince Memorial Achievement Award*

A book award valued at \$100. Awarded annually to an outstanding graduating Honours student in Economics. The student will be selected on the recommendation of the Award Committee of the Department of Economics. Book(s) will be selected by the Department in consultation with the recipient. Endowed 1984 by Professor Kanta Marwah.

*John R. Pugh Scholarship*

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding, full-time student proceeding from Second to Third year of the Bachelor of Computer Science program. Endowed in 1996 in honour of John Pugh, Director of the School of Computer Science from 1986-90, 1991-94.

*Purvins Memorial Award*

Value \$100. Awarded annually, when merited, on the recommendation of the Director of the School of Industrial Design to a full-time student proceeding from one year to another in the Industrial Design program. Selection of the recipient will be based on creative applications of materials and technologies in industrial design projects. Donor: The family of the late Laimons Purvins who was a technician in the School of Industrial Design. Established 1990.

*James H. Rattray Memorial Scholarship*

Value \$500. Awarded annually to a student entering First-year Engineering at Carleton University. Donor: The late James H. Rattray, M.C. Endowed 1961.

*Don Reid Memorial Scholarship*

Awarded annually, when merited, on the recommendation of the Director of Student Awards after consultation with the Department of Physical Recreation and Athletics, to a full-time student proceeding from one year to another of an undergraduate program. The selection will be made on the basis of outstanding academic achievement and involvement in interuniversity sports. Established by funds donated in honour of the late Don Reid, a 1978 Carleton graduate and member of the Ravens basketball team. Endowed 1990.

*Peter Reilly Scholarship*

Awarded annually to a student entering either the Third or Fourth year of a degree program in the School of Journalism and Communication who shows talent, aptitude and concern for journalistic disciplines. Preference will be given to a student entering Fourth year who has demonstrated a potential for effective use of the medium of television, current affairs and/or documentary programs. Donors: Friends of the late Peter Reilly. Endowed 1978.

*Risk and Insurance Management Society Award of Excellence*

Four awards are given annually by the Canadian Capital Region of the Risk and Insurance Management Society (RIMS) to students enrolled at Carleton University who have completed at least 4.0 credits towards a degree and who have displayed outstanding academic achievement. The award is composed of a credit value of \$500 for the purpose of defraying fees related to courses in the Canadian Risk Management Certificate Program offered through the Canadian Capital Region Chapter of RIMS. Donor: Canadian Capital Region Chapter of RIMS. Established 1994.

*Rogers Communications Award in Mass Communication*

Awarded annually to an outstanding Fourth-year honours student enrolled in the Mass Communication program. The recipient will



be selected by the Awards Committee of the Mass Communication program. Endowed 1991 by Rogers Ottawa Ltd.

*Rogers Communications Award in Television Journalism*

Awarded annually on the recommendation of the School of Journalism to the student graduating from the Bachelor of Journalism program who shows the most promise as a television journalist. Endowed 1991 by Rogers Ottawa Ltd.

*Rolls-Royce Scholarship*

Value \$1,500. Awarded annually, on the recommendation of the Faculty of Engineering, to a student proceeding from Third to Fourth year of the Engineering program who has demonstrated an interest in aerospace engineering and displays great promise in this field. Donor: Rolls-Royce Industries Canada Inc. Established 1988.

*Herman and Zelda Roodman Award in Journalism*

Value \$500. Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, for excellence in reporting, to a graduating student in the Bachelor of Journalism program. Donors: Mr. and Mrs. Herman S. Roodman. Established 1965. Revised 1980, 1988, 1995.

*R.L. Rosenberg Memorial Scholarship in Mathematics*

A scholarship awarded on the recommendation of the Department of Mathematics and Statistics to an outstanding student entering a First-year Honours program in the Department of Mathematics and Statistics at Carleton University. Endowed in 1986 by the daughters, friends and academic colleagues of the late Reuben L. Rosenberg, who served this University and his Department, with distinction.

*Barbie Ross Memorial Award*

Value \$500. Awarded annually on the recommendation of the Residence University Management and Policy Board to a full-time student in good academic standing who has demonstrated active participation in the affairs of the Carleton University residence community. Donors: Friends and family of the late Barbie Ross. Endowed 1983.

*Annie Fraser Roy Scholarships*

Awarded annually to an in-course student or students enrolled in a program, the majority of whose courses are in literature. Donor: The late Marjorie T. Roy. Endowed 1982.

*James and Jane Fraser Roy Scholarships*

Awarded annually, if merited, to outstanding students proceeding from one year to another in a degree program at Carleton University. Donor: The late Jean Roy. Endowed 1975.

*J. Lansing Rudd Scholarship*

Awarded annually to a superior student progressing from one year of program to another at Carleton University. Donor: The late J. Lansing Rudd. Endowed 1967.

*Department of Russian Undergraduate Award*

Awarded annually on the recommendation of the Department of Russian to an outstanding undergraduate student pursuing a B.A. or Honours degree in the Department of Russian. Donors: Members and friends of the Department of Russian. Endowed 1983.

*Celia Ruygrok Memorial Scholarship*

Awarded annually on the recommendation of the Dean of Social Sciences to a deserving student proceeding from Second to Third year of the Criminology and Criminal Justice Concentration. Endowed in 1986 by family and friends of the late Celia Ruygrok, B.A. 1985.

*Derek Rymerson Memorial Scholarship*

Awarded annually, on the recommendation of the Director of the School of Computer Science, to an outstanding student proceeding from Third to Fourth year of the Computer Science program. Endowed in 1992 by the family and friends of Derek Rymerson.

*Jacques and Hélène Sabourin Memorial Scholarship*

Awarded annually, on the recommendation of the Director of the School of Architecture, to the student showing the greatest proficiency in a course devoted to lighting for architecture. Donated by the Illuminating Engineering Society and its members in memory of Jacques and Hélène Sabourin who were active in the field of illumination and who tragically lost their lives in an automobile accident in 1984. Endowed 1985.

*St. Patrick's College Scholarship*

Awarded annually to an entrance or in-course student or students in the humanities and social sciences, with preference being given to students with physical disabilities. Endowed in 1980 to perpetuate the name and traditions of St. Patrick's College.

*Samuel Sair Prize in Business Ethics*

Awarded annually, on the recommendation of the Director of the School of Business, to an outstanding student who is studying business ethics and is a Canadian citizen or landed immigrant. Endowed 1985. Revised 1997.

*Nicholas C. Scolozzi Scholarship in Architecture*

Awarded annually, on the recommendation of the Director of the School of Architecture, to a deserving student who excels in the Fourth-year design studio of the Architecture program. Endowed in 1997 by family and friends in memory of Nicholas Scolozzi, a former Carleton University architecture student.

*Lawrence Segal Memorial Fund*

Established as a book prize for a student enrolled in the School of Business. Donors: The friends of the late Lawrence J. Segal, B.Com. Carleton, 1961. Endowed 1970. Revised 1986.

*Richard J. Semple Memorial Award in Mathematics*

Awarded annually to an outstanding student enrolled in an Honours Mathematics program and proceeding to Third or Fourth year of studies at Carleton University. Donors: Friends and family of the late Richard J. Semple. Endowed 1977 in memory of Richard J. Semple, a long-time faculty member of the Department of Mathematics.

*Eric Sigurdson Award*

Awarded annually to an outstanding student in the Computer Systems Engineering program. Donors: Friends and colleagues of the late Professor Eric L. Sigurdson, former member of the Department of Systems and Computer Engineering, in recognition of his contributions to teaching, research and development, and to the establishment of the Computer Systems Engineering program. Endowed 1982.

*E. Norman Smith Memorial Award*

Value \$500. Awarded annually to a Third-year Bachelor of Journalism student who, in the opinion of a selection committee appointed by the Director of the School of Journalism and Communication, shows great promise as a newspaper journalist. Established in 1995 in honour of E. Norman Smith, a founder of both the Ottawa Journal and The Canadian Press. Donor: Granddaughter Sheena Pennie, a principal of Delta Media.

*Kenneth F. Smith Memorial Award in Journalism*

Awarded annually, on the recommendation of the School of Journalism and Communication, to the First-year student standing highest in the Honours Journalism program. Donated by relatives, friends and business associates in honour of the late Kenneth Smith, a Carleton Journalism graduate who became a noted business writer and editor with the Canadian Press. Endowed 1985.

*Richard R. Snell Memorial Award in Journalism*

Awarded annually, on the recommendation of the School of Journalism and Communication, to an outstanding student in the Journalism program who shows exceptional abilities in investigative reporting. Donated by friends and relatives in honour of Richard R. Snell, a Carleton Journalism graduate and Southam Fellow, who following a notable newspaper career became a leader in the field of public sector communications. Endowed 1988.



*Mercy Neal Southam Entrance Scholarships*

Entrance scholarships will be awarded annually, if merited, to students entering the First year of Arts, Social Sciences, Journalism, Commerce, Science, Engineering, Architecture, Industrial Design or Public Administration at Carleton University. Endowed in 1949. Under the terms of bequest of the late Wilson Mills Southam, the scholarships are in memory of his grandmother, Mercy Neal Southam (1809-1887), "Sturdy pioneer of the Southam Family in Canada."

*Award of the Embassy of Spain*

For excellence in the study of Spanish, a book award is offered annually by the Spanish Embassy in Canada. Established 1960.

*Bette Spooner Award in Classics*

Value \$300. Awarded annually, on the recommendation of the Department of Classics, to a student in the Third or Fourth year of the B.A. or Honours program in Classical Civilization. Donor: Family and friends of Bette Spooner. Established 1993.

*Randell Stanton Memorial Book Prize*

Awarded annually to an outstanding full-time student proceeding from Second to Third year. This prize is awarded in alternate years to a student in the English Language and Literature program and the Architecture program. The book prize is named in honour of an alumnus of Carleton University who studied and loved the disciplines of English literature and architecture. Donor: Family and friends of the late Randell Stanton. Endowed 1990.

*Ben and Mary Steinberg Foundation Scholarships*

Awarded to outstanding students who may be in need of financial assistance in the furtherance of their studies. Established 1978.

*Stentor Scholarships in Communications Engineering*

Value \$2000 each. Two scholarships are awarded annually on the recommendation of the Faculty of Engineering, to outstanding Third- or Fourth-year students in the Department of Systems and Computer Engineering who are specializing in communications engineering. Donor: Stentor Resource Centre Inc. Established 1997.

*Irene Gertrude Stitt Scholarship Fund*

Awarded annually to students of high proficiency proceeding from one year of program to another at Carleton University. The fund has been made possible by a bequest of the late Edith May Stitt, in memory of her sister, Irene G. Stitt. Endowed 1966.

*Barbara Sudall Book Prize*

Awarded annually on the recommendation of the Department of English to an outstanding part-time student in the B.A. or Honours program in English. Endowed 1986 by friends and colleagues of Barbara Sudall in recognition of her twenty-two years of service as the Faculty Administrator in the Faculty of Arts.

*Awards of the Ambassador of Switzerland to Canada*

For excellence in the study of French, German, and Italian, book awards are offered annually by the Ambassador of Switzerland to Canada. Established 1953.

*David A. Thomas Scholarship in Computer Science*

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding full-time student, proceeding from one year to another of the Bachelor of Computer Science program. Donors: Friends and colleagues of David A. Thomas, a longtime member of the University community, in recognition of his contribution to the development of academic programs and computing environment at the University and in recognition of his special interest in, and support of, students. Endowed 1991.

*Michael Thompson Scholarship in English*

Awarded annually, on the recommendation of the Chair of the Department of English, to the full-time Honours English student with the highest GPA who is proceeding from Third to Fourth year of the English program or from Fourth year to Carleton's Master of Arts program in English. Endowed in 1992 by colleagues, friends and former students in honour of Professor Michael Thompson's many contributions to the Department and to the University.

*Thomson Award for Reporting*

Value \$300. Awarded annually to a student proceeding from Third- to Fourth-year Honours Journalism judged to be outstanding in reporting. Donor: Thomson Newspapers. Established 1970.

*Henry Marshall Tory Award*

Presented annually to an outstanding graduating student who has shown a high degree of academic application, has indicated an interest in the University by broad participation in extracurricular activities of a constructive nature, has indicated qualities of leadership, and has attended Carleton University for at least three Fall/Winter sessions. Each candidate is nominated by three members of the Students' Association and selection is made by a committee composed of the President of the University, a member of the Faculty chosen by Senate, the Director of Student Awards, and three students chosen by the Students' Council. The winner's name is inscribed on the master trophy and the student receives a miniature replica. The award was established in 1950 by the Students' Council of Carleton College.

*Hubert Travers Scholarship*

Awarded annually to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton University. Preference shall be given to students from the Ottawa area. Endowed 1983.

*Underhill Prize*

Value \$200. Awarded annually, on the recommendation of the Department of History, to the graduating student with the highest overall GPA in the Honours History program. Endowed 1986.

*Vered Foundation Scholarships*

Two scholarships valued at \$500 each; one awarded annually, if merited, to an Engineering student in Civil Engineering; the second scholarship awarded annually, if merited, to a student who is proceeding from one year of course to another in a degree program in Political Science. Donor: The Vered Foundation of Ottawa. Established 1975.

*Vistas Scholarship*

Value \$500. Awarded annually to a student from the City of Ottawa, Alta Vista Municipal Ward, who is entering the First year of the Bachelor of Journalism program. Donor: Alta Vista Community Newspaper. Established 1990.

*L.N. Wadlin Scholarship in Mathematics*

Awarded annually to a student proceeding from one year to another at Carleton University who has shown excellence in the study of mathematics. Donor: The late Lorenzo N. Wadlin. Endowed 1965.

*Wainwright Scholarships*

Awarded annually to a student or students studying Canadian history. Donor: Miss Dora I.I.S. Wainwright. Endowed 1974. Revised 1980.

*Jessie and Wreford Watson Award in Geography*

Awarded annually to the outstanding student entering the final year of Honours Geography at Carleton University. Dr. Wreford Watson, then Chief Geographer of Canada, founded geography at Carleton in 1949. One year later he was joined by Mrs. Watson and together they lectured in geography at Carleton until 1954. Donors: Friends, faculty and alumni of the Department of Geography. Endowed 1980.

*R.A. Wendt Book Prize*

Awarded on the recommendation of the Department of Psychology, preference will be given to a student in an undergraduate degree program for work done in the history of psychology. This fund was established on the occasion of Professor Wendt's retirement, in recognition of his contributions over many years to the Department of Psychology, the Faculty of Social Sciences, and to the University community. This prize is intended to assist the recipient to build a personal library.



*Elizabeth White Memorial Award for Zoological Collection*

Value \$50, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology to a student who has submitted, by November 1, an outstanding collection of insects or arachnids, properly preserved and identified. Donor: Anonymous. Established 1953.

*Donald R. Wiles Scholarship in Chemistry*

Awarded annually, when merited, on the recommendation of the Department of Chemistry to a student proceeding from First to Second year of an Honours program in Chemistry, Biochemistry or any Combined Honours program with Chemistry. Preference will be given to a student intending to study inorganic or analytical chemistry. Donor: Dr. Donald R. Wiles and friends. Endowed 1990.

*Wilgar Memorial Award in English*

A book prize awarded to a Carleton University undergraduate who has shown excellence in essay-writing. Established 1951, in memory of the late W.P. Wilgar, Assistant Professor of English at Carleton University, 1948-50. Endowed 1952.

*Goldie Wilkinson Scholarship*

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding student proceeding from First to Second year of the Bachelor of Computer Science program. Donors: Friends and colleagues of Goldie Wilkinson, a long time member of the University community, in recognition of her special interest in, and support of, students. Endowed 1988.

*Kenneth R. Wilson Memorial Award for Journalism Graduates*

Offered annually to a student graduating in Journalism who, in the opinion of a board of selection, shows exceptional promise as a future reporter and interpreter of Canadian affairs. Endowed 1953, in memory of Kenneth R. Wilson, Ottawa Editor of *The Financial Post*, by a group of his personal friends.

*Morley E. Wilson Scholarship*

Awarded annually to an outstanding student in Honours Geology who is proceeding from one year of program to another at Carleton University. Donor: The late M.E. Wilson, Sessional Lecturer in Geology at Carleton University, 1947-1953. Endowed 1975.

*Phyllis Wilson Award in Journalism*

Awarded annually to the top student in Second-year reporting. The recipient is selected by the faculty members of the School of Journalism and Communication on the basis of recommendations from the Second-year reporting instructors. Donors: Friends and former students of Professor Phyllis Wilson. Endowed 1982.

*Herbert I. Wolf Award*

Awarded annually to an undergraduate student enrolled in a full-time program at Carleton University. The award is given in memory of Herbert I. Wolf, the son of the donor, who died in active service. Donor: George M. Wolf. Endowed 1981.

*Women's Business Network Association of Ottawa Scholarship*

Value \$2,000. Awarded annually, on the recommendation of the Director of the School of Business, to an outstanding full-time undergraduate student proceeding to Third or Fourth year of the Commerce program. The recipient is to be a Canadian citizen or permanent resident. Donor: Women's Business Network Association of Ottawa, an association created to promote, improve and profile women in business. Established 1987. Revised 1990.

*Gordon J. Wood Scholarships in English*

Value \$350 each. One to a full-time student in English proceeding from Second to Third year, who has taken at least 3.0 credits in English at Carleton; one to a full-time student in English proceeding from Third to Fourth year, who has taken at least 4.0 credits in English at Carleton University. The assessment is made on the basis of overall grades for the year, including Summer courses (if any) from the previous Summer. English marks will be given particular consideration if necessary in the ranking of qualifying students. Donor: Gordon J. Wood, Professor of English, Carleton University. Established 1974.

*Susan Joan Wood Memorial Scholarship*

Awarded annually on the recommendation of the Department of English. Preference will be given to a student proceeding from the Third to Fourth year of an Honours program in English with an emphasis on Canadian literature. Donor: Friends and colleagues of Susan Joan Wood. Endowed 1982.

*Hume Wrong Scholarship*

Established by Mrs. Hume Wrong in memory of her late husband. Awarded annually to the leading student in the Third year of History or Political Science proceeding to his or her final Honours year. Donor: The late Mrs. Hume Wrong. Endowed 1962.

*YTV Canada Inc. Youth and Television Award*

Value \$1000. Awarded annually to a Fourth-year Honours student enrolled in the Mass Communication program whose thesis topic is related to youth and television. The recipient will be determined by a panel selected by the Associate Director (Mass Communication) of the School of Journalism and Communication. Donor: YTV Canada Inc. Established 1992.

*Nathan and Sara Zelikovitz Award*

Awarded to an outstanding undergraduate student registered in a full-time program at Carleton University. Donor: Nathan Zelikovitz. Endowed 1979.

## Bursaries

*African Students' Association Bursary*

Awarded to a student in need of financial assistance who is a member of the African Students' Association and who is in good academic standing. Endowed in 1997 by the Carleton University African Students' Association.

*Evelyn Aldridge Bursary in Economics*

Awarded annually to a deserving and needy student or students in any year of B.A. or Honours studies in the Department of Economics at Carleton University. Endowed in 1980 in honour of Evelyn Aldridge, Department Secretary and Administrator, in recognition of 20 years of devoted service to the University and to the Department of Economics, its faculty and students. Donors: Members and graduates of the Department of Economics and friends of Mrs. Aldridge.

*A. Andras Memorial Bursary*

Awarded annually to an undergraduate student attending Carleton University who is in need of financial assistance and whose parent is a member of a trade union that is affiliated to the Canadian Labor Congress. Endowed 1972, in memory of the late Mr. A. Andras who was a member of Carleton's Board of Governors.

*Milly Armour Memorial Bursary in Chemistry*

Awarded annually to a deserving student proceeding from one year to another in the Major or Honours program in Chemistry who is in need of financial assistance. Endowed in 1993 by family and friends of Milly Armour who was a librarian at Carleton for many years.

*Atkinson Charitable Foundation Bursary Fund*

Awarded annually to undergraduate students who are residents of Ontario and who are in need of financial assistance. Donor: The Atkinson Charitable Foundation. Endowed 1997.

*Bank of Montreal Bursaries*

Awarded annually to deserving students who require financial assistance in order to attend, or continue their studies, at Carleton University. Preference is given to students who are studying within disciplines which are most relevant to the high technology industry, including computer and systems engineering, electrical engineering, and computer science. Donor: Bank of Montreal. Endowed 1997.

*F. Luella Barrigar Bursaries*

Awarded annually to students entering Carleton University or proceeding from one year of program to another who are in financial need. Some preference shall be given to students with an interest



in music. The bursaries are provided through the bequest of the late Miss F. Luella Barrigar, a teacher of music at the Ottawa Teachers' College. Donor: The late F. Luella Barrigar. Endowed 1981.

*Nurse "Bill" Bayley Memorial Fund*

The fund is to provide for assistance in emergencies for students requiring dental and medical care. Endowed in 1974 by friends and students, this award is named in honour of the late Kathleen Bayley, a member of the Counselling and Health Services from 1965 to the time of her death June 7, 1973.

*R.A. Beamish Bursary*

Awarded annually to a student entering or progressing from one year to another who, without financial assistance, could not continue his or her formal education. To be eligible, an applicant must be a resident of one of the 11 eastern counties of Ontario (Renfrew, Frontenac, Lanark, Leeds, Carleton, Grenville, Russell, Dundas, Prescott, Glengarry, Stormont). Donor: The R.A. Beamish Foundation. Endowed 1951.

*Euphemia Bell Bursary Fund*

To provide bursaries to deserving students in financial need. The fund has been made possible by a bequest of the late Euphemia Bell. Endowed 1978.

*Bell Canada/Ottawa Senators Bursary*

Awarded annually to a student who is in the Second year of an Engineering or Science program and who is in need of financial assistance. Donor: Proceeds from the annual Bell Canada/Ottawa Senators charity golf tournament. Endowed 1997.

*Beta Sigma Phi Sorority Bursary*

Value \$800. Awarded to a deserving full-time student or students in good standing requiring financial assistance to complete his or her studies. Preference will be given to a member of Beta Sigma Phi in good standing or the son or daughter of same. Donor: The City Council of Beta Sigma Phi Sorority. Established 1964. Revised 1981, 1985.

*J.P. Bickell Foundation Bursary Fund*

The Trustees of the J.P. Bickell Foundation have established bursaries in the Faculty of Science. An applicant must be taking a normal sequence of courses leading to a degree in Geology and must have competent academic standing. Carleton students may obtain full details of the bursary from the Awards Office. Donor: J.P. Bickell Foundation; Trustees: National Trust. Established 1956.

*Robert Binney Memorial Award*

Awarded annually to a student with good academic standing who is in the Third year of a program in the School for Studies in Art and Culture and who is in need of financial assistance. Endowed in 1997 by his parents in memory of Robert Binney, a 1991 Carleton graduate.

*Birks Family Foundation Bursaries*

The Birks Family Foundation has established a plan of annual contributions to the student aid fund of recognized Canadian universities and colleges for the creation of the Birks Family Foundation Bursaries. The bursaries are awarded by the foundation on the recommendation of the University Scholarship Committee and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation.

*Warren Blackwood Memorial Bursary*

Awarded annually to a full-time student proceeding from one year to another in a Bachelor of Arts program. The bursary is awarded to a worthy student who is in need of financial assistance. Endowed in 1996 in memory of Warren Blackwood, a Carleton undergraduate student.

*Elissa Gail Bonder Bursary in Journalism*

Awarded in alternate years to a deserving student, from a high school in the Regional Municipality of Ottawa-Carleton, who is in the First year of the Journalism program and is in need of financial assistance. Established in 1995 by Linda and Ted in memory of his

daughter Elissa Gail Bonder who graduated posthumously from Lisgar Collegiate Institute in 1991.

*Gretta Boyd Memorial Bursary*

Value \$1,000. First awarded in 1969-70 to an undergraduate student in any year or faculty with good academic standing and in need of financial assistance. Donor: Kiwanis Club of Nepean. Established 1969 in memory of the late Gretta Boyd. Revised 1985, 1994.

*Nathan Braham Bursary*

Awarded annually to an entering or returning student with superior academic standing who is in need of financial assistance. The bursary has been made possible by a bequest of Mr. Nathan Braham. Endowed 1964.

*Donald William Buchanan Bursary*

Awarded annually to a student entering or progressing from one year to another and who is in need of and deserving of assistance to continue studies as a full-time student. Donor: The late Donald William Buchanan. Endowed 1967.

*C.A.M.P.S. Bursary*

The fund is designed to provide assistance to mature or part-time students who are in financial need. Endowed in 1992 by the Carleton Association of Mature and Part-Time Students (C.A.M.P.S.) to commemorate its 10th anniversary.

*Canadian Society for Mechanical Engineering/Marc Arnold Bursary*

Awarded annually to a deserving student who is proceeding from Third to Fourth year of the Mechanical Engineering program who is in need of financial assistance. Endowed in 1997 by The Canadian Society for Mechanical Engineering and Chris Arnold in honour of his son Marc who is a graduate of Carleton University's Mechanical Engineering program.

*Carleton University Academic Staff Association Bursaries*

Awarded annually to full-time students who are residents of Ontario and who are in need of financial assistance. Donor: Carleton University Academic Staff Association. Endowed 1997.

*C.U.A.S.A. Business Agent's Bursary*

Awarded annually to a full-time student who is proceeding from one year of program to another, and is in need of financial assistance in order to continue his or her studies at Carleton. Endowed in 1988 by Patricia Ann Finn.

*Carleton University Alumni Association Bursary Fund*

Awarded annually to deserving students who require financial assistance in order to attend, or continue studies at, Carleton University. Donors: Carleton University alumni. Initiated by the National Alumni Council. Endowed 1996.

*Carleton University Faculty Wives Association Bursary*

Awarded to students in good academic standing and in financial need. Donor: Carleton University Faculty Wives Association. Established 1977. Endowed 1979. Revised 1988.

*Carleton University Refugee Student Bursary*

Value \$3,000. Awarded annually on the recommendation of the World University Service of Canada to a refugee student entering or continuing his or her program at Carleton University, who is in need of financial assistance.

*Bower Carty Bursaries*

Awarded annually to deserving students who require financial assistance in order to attend, or continue their studies, at Carleton University. Donor: Bower Carty. Endowed 1997.

*Desmond Geoffrey Carty Bursary*

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Desmond Geoffrey Carty. Endowed 1983.



*Edward Godfrey Carty Bursary*

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her husband, Edward Godfrey Carty. Endowed 1964.

*Maurice Frederick Carty Bursary*

Awarded annually to a student in course who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Maurice Frederick Carty. Endowed 1957.

*The Fred Cinkant Bursaries in Engineering*

Awarded annually to Canadian citizen students entering or proceeding from one year of program to another in the Faculty of Engineering, who are in need and deserving of financial assistance to continue their studies at Carleton. Donor: Fred Cinkant, in memory of his mother and father, Mr. and Mrs. Antal Cinkant. Endowed 1984.

*The Lorraine Cinkant Bursaries in Science*

Awarded annually to Canadian citizen students entering or proceeding from one year of program to another in the Faculty of Science, who are in need and deserving of financial assistance to continue their studies at Carleton. Donor: Lorraine Cinkant, in memory of her mother and father, Mr. and Mrs. Edmond Sabourin. Endowed 1984.

*Steve Coughlin Memorial Bursary*

Awarded annually to deserving students requiring financial assistance, who are in the Second, Third or Fourth year of an undergraduate program. Endowed in 1990 by friends and family in memory of Steve Coughlin B.A. 1989.

*The Harold Crabtree Foundation Award Fund*

Awarded annually to outstanding entering or returning undergraduate students in the Faculty of Arts and Social Sciences who are in need of financial assistance. Donor: The Foundation was founded in 1951 in Montreal by Harold Crabtree to address his charitable giving interests in education and health. Endowed 1997.

*David Currie Memorial Bursary*

Value \$2,500. Awarded annually to a full-time student enrolled in the Second year of a program, who is from the Regional Municipality of Ottawa-Carleton and is in need of financial assistance. The bursary may be held until graduation, at which time a new award will be made. Donor: Royal Canadian Legion, Ottawa Branch 16. Established 1990 in memory of Lieutenant Colonel David Currie, V.C., who was a member of Ottawa Branch 16 and a Canadian who served his country well in war and peace.

*Disabled Student Bursary Fund*

The fund is to provide for disabled students in need of financial assistance. Donor: Joy MacLaren. Endowed 1988.

*Gerhard Dittmann Bursary*

Awarded annually to students in financial need who are entering or proceeding from one year to another of an undergraduate program. The bursary has been made possible by a bequest of the late Gerhard Dittmann, a long time employee of Carleton University. Endowed 1990.

*Claude A. Edwards Bursary*

Awarded annually to deserving full-time mature students who are in need of financial assistance to continue their studies. Established in 1996 by Claude A. Edwards, former Chair of the Board of Governors.

*Faculty of Engineering Bursary*

Awarded annually to undergraduate students in the Faculty of Engineering who are in need of financial assistance. Endowed in 1997 by faculty and staff of the Faculty of Engineering.

*Engineers' Wives Association Bursary*

Awarded annually to deserving students enrolled in the Faculty of Engineering. Donor: Engineers' Wives Association of Ottawa. Established 1959. Revised 1987.

*Department of Environmental Science Bursary*

Awarded annually to a deserving student enrolled in the Environmental Science program who requires financial assistance in order to attend, or continue studies at, Carleton University. Donor: Dr. Donald Wiles. Endowed 1997.

*Lillian Fallis Bursary*

Awarded annually to a deserving student(s) proceeding from one year of program to another in the School of Business at Carleton University and who is in need of financial assistance. Donors: The family of the late Duncan H. MacLaren, a graduate of the School of Business. Endowed in 1980 in honour of Mrs. Lil Fallis, a longtime member of staff in the school, in recognition of her special interest in and support of students.

*The Muriel Foulger Art History Travel Bursary*

Awarded annually, on the recommendation of the Art History program co-ordinator, to deserving students in the Art History program who require financial assistance in order to meet travel or accommodation costs associated with optional study trips undertaken with the approval of the authorities responsible for the Art History program. Donors: Family and friends of the late Muriel Foulger, a long-time staff member and graduate of the University, in honour of her love of art and travel. Endowed 1992.

*Bill Fraser Memorial Bursary*

Awarded annually to a deserving student entering or enrolled in a French program who is in need of financial assistance in order to attend, or continue studies at, Carleton University. Donors: Colleagues and friends in memory of Bill Fraser who was a faculty member within the Department of French from 1966 to 1995. Endowed 1995.

*Friends of Carleton Bursary Fund*

A sum to provide bursaries for deserving students in need of financial assistance. This fund has been made possible by contributions from the Friends of Carleton University. Established 1967.

*The Douglas Fullerton Award in Urban Studies*

Awarded annually, when merited, to a student engaged in research leading to an honours thesis or project in the field of urban studies. The fund has been established to assist students who are in need of financial assistance to undertake study of the urban area, particularly as it relates to the quality of urban life. Recipients will be chosen by the Chair of the Department of Geography and Environmental Studies on the recommendation of a selection committee of faculty members. Endowed in 1997 by friends, colleagues and family of the late Douglas Fullerton, former Chairman of the National Capital Commission, in recognition of his visionary contributions to city life.

*Henri and Jacques Gervais Memorial Fund*

Bursaries are awarded annually to deserving undergraduate students in need of financial assistance to continue their studies at Carleton University. Endowed in 1996 by Claire Gervais in loving memory of her husband, Henri N. Gervais, and her son, Jacques N. Gervais.

*Mary C. Grant Bursary (Laurentian Chapter, I.O.D.E.)*

Value \$1,125. Awarded annually to not more than three students who require financial assistance. The bursary was endowed in honour of Mary C. Grant. Donor: The Laurentian Chapter, I.O.D.E. Established 1962. Revised 1980.

*Great-West Life Assurance Company Award in Business*

Awarded annually to deserving students enrolled in the Fourth year of the Bachelor of Commerce program who are following the marketing concentration and are in need of financial assistance. Endowed in 1997 by the Great-West Life Assurance Company.



*Shirley Greenberg Award*

Value \$500. Awarded annually to a deserving student who is a sole-support parent and who is in need of financial assistance. Donor: Canadian Federation of University Women/Ottawa. Established 1993. Revised 1996.

*Heather and Ross Hamlin Bursaries*

Awarded annually to deserving students who require financial assistance in order to attend, or continue their studies, at Carleton University. Donor: Heather and Ross Hamlin. Endowed 1997.

*Alison Hardy Memorial Bursary*

Awarded annually to a deserving student in the Third or Fourth year of the Journalism program who requires financial assistance to complete the program. Established in 1993 by the National Council of Women of Canada in memory of Alison Hardy who was an active member of the Council for many years.

*D.R. Harley Consultants Limited Bursary*

Awarded annually to a full-time student in the Third year of the Journalism, Mass Communication or Public Administration program. The bursary is awarded to a worthy student who is in need of financial assistance. Established in 1994 to commemorate the 10th anniversary of D.R. Harley Consultants.

*Hobbs/Weber Bursary in Business*

Awarded annually to a full-time student in financial need, who has good academic standing and is in the Third or Fourth year of the Bachelor of Commerce or Bachelor of International Business program. This award was established by the Faculty and Staff of the School of Business in recognition of the contributions of Professors Clement Hobbs and Wesley Weber to the academic life and development of the School of Business. Endowed 1996.

*C.T. Hobin Bursaries*

Awarded annually to deserving Ontario students in financial need who are in good academic standing and are in the Third or Fourth year of the Bachelor of Architecture or the Bachelor of Humanities programs. Donor: Barry J. Hobin, B.Arch 1974, son of Mr. C. T. Hobin. Endowed 1997.

*International Student Bursary Fund*

The fund is to provide for foreign students in good academic standing who are enrolled in a full-time undergraduate program and in need of financial assistance. Donor: Anonymous. Endowed 1989.

*Bill and June Joe Bursary*

Awarded annually to deserving students from the Regional Municipality of Ottawa-Carleton who require financial assistance in order to attend, or continue studies at, Carleton University. Donor: Bill and June Joe. Endowed 1997.

*Grace and Ken Johnston Bursary*

Awarded annually to two full-time students in the Third or Fourth year of the History program who are in need of financial assistance. Donors: The Ottawa City Union of the International Order of the King's Daughters and Sons. Endowed in 1991 in honour of Ken Johnston and his wife the late Grace Johnston.

*Dr. Roger Kaye Memorial Award*

Awarded annually to a deserving student enrolled in the Faculty of Engineering who is a resident of Ontario and who is in need of financial assistance to continue studies at Carleton University. Donors: Colleagues, family and friends in memory and honour of Dr. Roger Kaye, who was a Professor of Systems and Computer Engineering. Endowed 1997.

*John Lyndhurst Kingston Bursary Fund*

The fund is to provide assistance to needy students in the study of architecture. This fund has been made possible by a bequest of the late Leslie Chandler Kingston. Endowed 1986

*Knights of Pythias, Aurora Lodge No. 53 Bursary*

Value \$150. Awarded to a good student progressing from one year of program to another who needs financial assistance to continue

his or her studies. Donor: Knights of Pythias, Aurora Lodge No. 53. Established 1960.

*Terry Lamb Memorial Award*

Awarded annually to a deserving student who is in the Fourth year of the Civil Engineering program and who is in need of financial assistance. Donors: Friends, family and associates in memory and honour of the late Terry Lamb, P.Eng., who graduated from Carleton University's Civil Engineering program in 1979. Endowed 1997.

*Patricia Larmonth Memorial Bursary*

Value \$400. Awarded on the basis of reasonable competence, need and personal qualifications to a Canadian citizen who is a full-time student. Donor: Ottawa Women's Canadian Club. Established 1971. Revised 1983.

*Jean A. Loates Bursary*

Awarded annually to a deserving student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. Donated by friends and colleagues of Jean Loates to mark her retirement in 1977. Mrs. Loates is a Carleton graduate and had a 26-year career at the University, first as Student Personnel Officer and from 1966 as Awards Officer. Endowed 1977.

*J. Graham MacDonald Memorial Bursary*

Awarded annually to one or more deserving students in financial need and proceeding from one year to the next in an undergraduate Geology program. Endowed in 1995 by the family of J. Graham MacDonald.

*Joe MacDonald Memorial Bursary*

Awarded to a full-time student in an arts or social sciences program who is in need of financial assistance and who was admitted to the University from a secondary school in Sudbury, Ontario. Established by funds donated in memory of Constable Joe MacDonald, a 1988 Carleton graduate and four-year member of the Ravens football team. Endowed 1993.

*Paul Mandl Bursary Fund*

Awarded annually to deserving students in the Honours Mathematics program who are in need of financial assistance. Endowed in 1997 by Dr. Paul Mandl, retired member of the Department of Mathematics and Statistics, and his colleagues.

*Manulife Financial Bachelor of International Business Bursaries*

Awarded annually to deserving students enrolled in Third year of the Bachelor of International Business Honours program who require assistance to study abroad. Donor: Manulife Financial (The Manufacturers Life Insurance Company). Established 1997.

*Marriott Bursary*

Awarded annually to deserving students enrolled in the Third year of the Bachelor of International Business Honours degree program who require assistance to study abroad. This fund was endowed in 1996 by Marriott Corporation of Canada, Ltd. to commemorate 30 years of partnership with Carleton University.

*Department of Mechanical and Aerospace Engineering Bursary*

Awarded annually to a deserving undergraduate student who is entering Mechanical and Aerospace Engineering and who is in need of financial assistance. Endowed in 1997 by members of the Department of Mechanical and Aerospace Engineering.

*Paul Menton Memorial Bursary*

Awarded annually to a physically disabled student, in good academic standing, who is proceeding from one year to another of an undergraduate program and is in need of financial assistance. Endowed 1990 by family and friends in memory of Paul Menton, Carleton University's first co-ordinator of disabled programs.

*National Congress of Italian Canadians Bursary*

Awarded annually to students studying Italian who are in good academic standing and who are in need of financial assistance. Endowed in 1997 by the National Congress of Italian Canadians



(Ottawa Region) to encourage and assist students in the study of Italian.

#### *The New Sun New Beginnings Bursary Fund*

Awarded annually to full-time and part-time students who have demonstrated a commitment to furthering their education and who are in financial need. Preference will be given to students in the Centre for Initiatives in Education Enriched Support Program, mature students and Aboriginal students. Endowed in 1997 by Mrs. Joy Maclaren, who was given the name "New Sun" at an Aboriginal Peoples' naming ceremony. Mrs. Maclaren, a former member of the University's Board of Governors, established the award in recognition of Carleton's role in providing accessible education.

#### *Ottawa Citizens' War Services Committee Bursary*

An annual sum of approximately \$300 is available to assist veterans, their dependents or descendants, who are students in good standing at Carleton University and are in need of financial assistance. Endowed 1948.

#### *Ottawa Superfluity Shop Bursaries*

An annual sum of approximately \$1,500 is available to provide bursaries for veterans of World War I or World War II, or for the descendants of such veterans, who are students in good standing at Carleton University and in need of financial assistance. Endowed 1947.

#### *Agnes J. Godard and Hector H. Perrier Memorial Fund*

Bursaries are awarded annually to deserving students in need of financial assistance to continue their studies in the Bachelor of Humanities program. Endowed in 1995 by Bernard L. Perrier in memory of his parents.

#### *Phillips Bursary*

The annual yield of a fund of \$5,000 made available to Carleton University by Miss L.A. Phillips. The bursary is to be awarded each year to a student with good academic standing who is in need of financial assistance. Endowed 1962.

#### *Edward T. Pryor Bursary Fund*

Awarded annually to one or more deserving students in the Sociology program who are in need of financial assistance. The fund has been made possible by contributions from friends and family in memory of Edward T. Pryor to honour his commitment to social science, scholarship and the youth of Canada. Endowed 1993.

#### *Alois Raffler Bursary*

Awarded annually to deserving students within the Faculty of Science who are residents of Ontario and require financial assistance in order to attend, or continue their studies at, Carleton University. Preference is to be given to students entering First year. Donors: Friends and colleagues of Alois Raffler in honour of Mr. Raffler on the occasion of his retirement as Director of the Science Technology Centre. Endowed 1997.

#### *Frank Ratcliffe Memorial Bursary*

Awarded annually to a full-time student in the Second, Third or Fourth year of the Bachelor of Journalism program. The bursary is awarded to a worthy student who is in need of financial assistance. Endowed in 1996 by the Canadian Olympic Association in memory of Frank Ratcliffe, the Association's former Director of Communication.

#### *James H. Ratray Bursary Fund*

To provide bursaries for students in Science and Engineering, with certain areas of preference. Donor: The late James H. Ratray, M.C. Endowed 1961.

#### *J. Lansing Rudd Bursary*

Awarded annually to a good student progressing from one year of program to another who needs financial assistance to continue his or her studies. Donor: The late J. Lansing Rudd. Endowed 1967.

#### *John E. Ruddy Bursary Fund*

Awarded annually to deserving full-time students enrolled in the Fourth or Fifth year of the Bachelor of Architecture program and to

Carleton University varsity team athletes. Students must be in need of financial assistance and in good academic standing. Endowed in 1997 by John E. Ruddy, B.Arch. 1975, who was a varsity athlete during his years at Carleton.

#### *Reece Scofield Memorial Bursary*

Awarded annually to a student in the Criminology program who is in need of financial assistance. Endowed in 1997 in memory of Reece Scofield by his family, friends and fraternity brothers of the Sigma Pi Fraternity.

#### *Abraham and Mary Shaffer Bursary*

Awarded annually to a good student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. Donor: The late Abraham Shaffer. Endowed 1967.

#### *Sprott Charitable Foundation Bursary Fund*

Awarded annually to deserving undergraduate students who are in need of financial assistance to complete their program. Donor: Eric S. Sprott, B.Comm., 1965. Endowed 1997.

#### *Z. Matthew Stankiewicz Bursary*

Awarded annually to a deserving student requiring financial assistance, who is entering or is enrolled in the School of Architecture at Carleton University. Donors: Friends, relatives and associates of the late Z. Matthew Stankiewicz. Endowed 1980.

#### *The William John Stauffer Memorial Bursary in Electrical Engineering*

Awarded annually to a student who is proceeding from Second to Third year in the Electrical Engineering program and who is in need of financial assistance. Endowed in 1990 by family and friends in memory of William John Stauffer who had an avid interest in electrical engineering.

#### *Ormond M. Stitt Bursary Fund*

To provide bursaries for deserving students in need of financial assistance. The fund has been made possible by a bequest of the late Miss Edith May Stitt, in memory of her brother, Ormond M. Stitt. Endowed 1966.

#### *Taggart Bursary Fund*

Awarded annually to students proceeding from one year of program to another in Engineering who are in good academic standing and require financial assistance. Donor: The Taggart Group of Companies. Endowed 1997.

#### *Isabella Ellen Taylor Memorial Bursary Fund*

To provide bursaries to undergraduates in any year of program who are in need of financial assistance and have good academic standing. Donor: The late Daisy Elizabeth Taylor. Endowed 1969.

#### *The M.A. Teall Foundation Bursaries*

Awarded annually to deserving students who require financial assistance in order to attend, or continue studies at, Carleton University. Donor: The M. A. Teall Foundation. Endowed 1997.

#### *C.R. Thompson Bursary*

Value to be announced. Awarded annually to a deserving student proceeding from one year of program to another in the Faculty of Engineering who is in need of financial assistance. Endowed in 1980 in honour of C.R. Thompson, Associate Dean of Engineering in recognition of his contributions to the Faculty of Engineering and its students.

#### *3M Canada Inc. Bursary*

Value \$500. Awarded annually to a good student or students in Commerce or Science, who requires financial aid. Donor: 3M Canada Inc. Established 1981.

#### *The Michael Timonin Bursary in Biology*

Awarded annually to deserving students, entering or proceeding from one year of course to another in the Major or Honours program in Biology and who are in need of financial assistance to continue studies at Carleton University. Endowed in 1990 by family and friends of Michael Timonin in honour of his 90th birthday.



*Angela Tong Memorial Award*

Awarded annually to a student with good academic standing who is in the Fourth year of the Honours program of the School of Linguistics and Applied Language Studies and who is in need of financial assistance. Endowed in 1997 in memory of Angela Tong by family, friends and the faculty of the School of Linguistics and Applied Language Studies.

*Hubert Travers Bursary*

Awarded annually to students in financial need who are entering or proceeding from one year to another of a full-time undergraduate program at Carleton University. Preference shall be given to students from the Ottawa area. Endowed 1983.

*Trivial Pursuit Bursary*

Awarded annually to deserving students in the Second, Third or Fourth year of the Journalism program who require assistance to complete their studies. Endowed in 1988 by the shareholders of Horn Abbot Ltd. in recognition of the perseverance, generosity and success of the creators of Trivial Pursuit and the Directors of Horn Abbot Ltd.

*University General Bursary Fund*

The fund is to provide bursaries in aid of students with satisfactory academic standing who, in the First or subsequent program years, are in need of financial assistance. Established by the University in 1954.

*John Gordon Urquhart Memorial Bursary*

Awarded annually to a deserving student proceeding from one year to another of the Commerce program who is in need of financial assistance. Endowed 1994 by the family in memory of John Gordon Urquhart, B.A. 1949.

*Zeev and Sara Vered Bursary Fund*

Awarded annually to students proceeding from one year to another of a program who are in good academic standing and who require financial assistance. Endowed in 1997 by Sara Vered, B.A.

1978 and Zeev Vered who was a member of the Carleton University Board of Governors from 1987 to 1998.

*Wainwright Bursary*

Awarded annually to a student or students studying Canadian history. Donor: Miss Dora I.I.S. Wainwright. Endowed 1974. Revised 1980.

*Ann E. Whitmore Bursary*

Value \$500. Awarded annually to a deserving student in the Geology program who requires financial assistance. The bursary has been made possible by a bequest from the estate of Ann E. Whitmore. Endowed 1994.

*Honourable Cairine Wilson Bursary*

Awarded annually to a good student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. The bursary has been made possible by a bequest of The Honourable Cairine Wilson, first woman member of the Canadian Senate. Endowed 1962.

## Loan Funds

*John Parker Loan Fund*

To provide loans of up to \$1,000 to students in their first year of studies at Carleton and up to \$1,500 in future years to students who require financial assistance to meet their educational costs. This fund also provides emergency loans for 60 days or less to students whose funds from other sources have been delayed. Application forms are available to students in the Awards Office.

*Government Aid programs:*

(See Student Services p. 24.)

Further information regarding existing sources of scholarships, awards, bursaries and loans may be obtained from the Awards Office, telephone 520-3600.

# Carleton Through the Years

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## The Institution

**1942**

The Ottawa Association for the Advancement of Learning was established to develop Carleton College. The College offered only evening classes in introductory university subjects, with some courses in public administration.

**1943**

The Ottawa Association for the Advancement of Learning was incorporated and the Institute for Public Administration was established.

**1945**

Beginning of day classes and full-time teaching in arts, science, journalism, and first-year engineering. Establishment of the Faculty of Arts and Science.

**1946**

Move from rented premises to First Avenue campus, formerly Ottawa Ladies' College. First degrees awarded in journalism and public administration.

**1947**

The College committed itself to develop pass and four-year honours programs.

**1949**

First undergraduate pass degrees in arts, science, and commerce awarded. Formation of Senate.

**1950**

First honours degrees in arts and science awarded.

**1952**

The Carleton College Act, 1952 passed by the Ontario Legislature. This changed the corporate name to Carleton College and confirmed the power to grant degrees. Property for Rideau River campus acquired.

**1953**

Establishment of the School of Public Administration.

**1954**

Appointment of Architectural Associates for Carleton to prepare a master plan for Rideau River campus, and to design the first group of buildings. First honorary degree (LL.D.) conferred on Dag Hammarskjöld, Secretary-General of the United Nations.

**1955**

First Master of Arts degree awarded.

**1957**

The Carleton University Act, 1957. Establishment of the School of Engineering. Establishment of the Institute of Canadian Studies.

**1958**

First Master of Science degree awarded.

**1959**

Move to Rideau River campus, following construction of the Henry Marshall Tory Building (science), the Maxwell MacOdrum Library, and Norman Paterson Hall (arts).

**1961**

First Ph.D. degree in science awarded. First degrees in engineering awarded.

**1962**

Southam Hall, the University Commons, Renfrew House and Lanark House (residences) completed. Norman Paterson Hall extended, and University Union opened.

**1963**

First Master of Engineering degree awarded. Reorganization into the Faculties of Arts, Engineering, Science, and Graduate Studies and Research.

**1964**

The C.J. Mackenzie Building (engineering) completed.

**1965**

The E.W.R. Steacie Building (chemistry), Grenville House and Russell House (residences), Maintenance Building, and Heating Plant completed.

**1966**

First Ph.D. degree in engineering awarded. The Physics Building completed (designated in 1972 as the Herzberg Laboratories for Physics). Establishment of the Schools of International Affairs and Commerce.

**1967**

Loeb Building (social sciences) completed. Integration of St. Patrick's College as a division of the Faculty of Arts. Integration of the School of Social Work.

**1968**

First Ph.D. degree in arts awarded. First Master of Social Work degree awarded. Establishment of the School of Architecture.

**1969**

Controlled Environmental Facility (biology), Administration Building, Glengarry House (residence), and University Commons (residence cafeteria) completed.

**1970**

University Centre and Parking Garage completed.

**1971**

Arts Tower completed.

**1972**

Architecture Building completed. School of Social Work accommodated on the Rideau River campus.

**1973**

St. Patrick's College moves to new facility on the Rideau River campus. First degrees in architecture awarded. New athletic complex containing 50-metre pool and fitness centre opened. School of Industrial Design established.

**1974**

Faculty of Graduate Studies and Research expanded into the Faculty of Graduate Studies and Research. School of International Affairs renamed the Norman Paterson School of International Affairs. Master of Journalism program approved for September 1974. Master of Arts programs in anthropology and in religion approved for September 1975. Program leading to Certificate in the Teaching of English as a Second Language established.

**1975**

Lester B. Pearson Chair for International Affairs approved for January 1, 1975. Establishment of Gerhard Herzberg Lecture Series in Science.



## 1976

First Dunton Alumni Award presented, January 1976. Creation of the Paterson Centre for International Programs in March 1976. Division of the Faculty of Arts into two separate faculties: the Faculty of Arts and the Faculty of Social Sciences, effective July 1976. First Master of Journalism degrees awarded, November 1976.

## 1977

Opening of the Criminology and Corrections concentration at St. Patrick's College, April 1977.

## 1978

School of Continuing Education established. Credit courses offered on cable television for the first time. Institute of Biochemistry established.

## 1979

St. Patrick's College ceased to operate as an academic unit of the University. Academic programs of the college continue as University programs, except for the Unified Liberal Arts Program.

## 1980

Establishment of the School of Computer Science. Establishment of the Chair of Office Automation in the Faculty of Engineering.

## 1981

Establishment of the Ottawa-Carleton Institute for Graduate Studies and Research in Chemistry, a joint program with the University of Ottawa. Establishment of a joint Ph.D. program in economics with the University of Ottawa.

## 1982

Establishment of the Ottawa-Carleton Centre for Geoscience Studies, representing the combined research strengths of Carleton University and the University of Ottawa, with programs leading to M.Sc. and Ph.D. degrees in most areas of geology. Establishment of a joint master's program in computer science with the University of Ottawa.

## 1983

Establishment of four joint graduate programs with the University of Ottawa: the Ottawa-Carleton Centre for Graduate Studies and Research in Biology; the Ottawa-Carleton Centre for Graduate Studies and Research in Physics; the Ottawa-Carleton Institute for Graduate Studies and Research in Electrical Engineering; and the Ottawa-Carleton Graduate Specialization in Neuroscience.

## 1984

Establishment of three joint graduate programs with the University of Ottawa in the areas of civil engineering, mechanical and aeronautical engineering, and mathematics and statistics.

## 1985

Master of Management Studies program established in the School of Business. The School of Public Administration offers a concentration in development administration in conjunction with the Norman Paterson School of International Affairs. An additional floor on one wing of the Herzberg Laboratories for Physics is constructed to house the School of Computer Science.

## 1986

The Social Sciences Research Building, the first new building on campus in a decade, is built to accommodate the rapidly-expanding research activity in the Faculty of Social Sciences. Construction of an annex on top of the Architecture Building to provide additional space for the Faculty of Engineering.

## 1987

The Institute of Women's Studies is established. The Arts Tower is renamed Davidon Dunton Tower/ Edifice Davidon Dunton in honour of Arnold Davidon Dunton, former Carleton University President and Director of the Institute of Canadian Studies. Major revisions to the Undergraduate Exchange Agreement with the University of Ottawa extend opportunities for students to study at both universities. The University launches the Carleton University Challenge Fund, the largest fund-raising campaign in its history.

## 1988

Canada's first full Bachelor of Engineering program in Aerospace Engineering is established. Bell-Northern Research Limited and

the Natural Sciences and Engineering Research Council provide funding for an Industrial Research Chair in Computer-Aided Engineering within the Department of Electronics. The Departments of Electronics and Systems and Computer Engineering are major partners in the Telecommunications Research Institute of Ontario (TRIO), one of seven "centres of excellence" chosen by the provincial government for scientific research. The Faculty of Science introduces cooperative education programs in computer science and biochemistry/biotechnology.

## 1989

The University launches its first major program of construction and renovation in more than 20 years. Four capital projects are initiated: an addition to the MacOdrum Library; the Minto Centre for Advanced Studies in Engineering; a 400-bed residence building; and an addition to Southam Hall. A fifth project, the Life Sciences Research Building, is completed in 1989. The Institute of Political Economy is established. The Canadian Centre for Trade Policy and Law, a joint initiative of the Norman Paterson School of International Affairs at Carleton and the Faculty of Law at the University of Ottawa, is established.

## 1990

A new Ph.D. program in computer science, offered jointly with the University of Ottawa, is established. The University introduces a Bachelor of Social Work degree program. The Paul Menton Centre for Persons with Disabilities is opened. The Centre for Research in Particle Physics is established to carry on the work of the National Research Council's large-scale physics projects.

## 1991

Establishment of the Carleton University Development Corporation. \$11 million extension to the MacOdrum Library opened. The university's \$30 million Challenge Fund campaign surpassed its goal; \$1.5 million "enhancement" campaign announced. Registrarial services for arts and social sciences re-organized into two separate offices. Establishment of the Centre for Analytical and Environmental Chemistry. Establishment of the School of Comparative Literary Studies. Establishment of the School for Studies in Art and Culture (bringing together the Departments of Art History, Film Studies, and Music). Establishment of the international exchange agreement between Carleton University, four Swedish universities, and three other Canadian universities (Laval, York, and the University of British Columbia). Establishment of the Carleton University/Polish faculty exchange agreement. Establishment of the Chair for Management in Technological Change. Establishment of M.A. programs in political economy, communication, legal studies, and applied language studies. Establishment of the women's history field in the Ph.D. program in history. Establishment of the Ph.D. program in public policy in the School of Public Administration.

## 1992

The University celebrates its 50th anniversary. Institute for Interdisciplinary Studies, which includes a new B.A. program in environmental studies, is established. Department of Civil Engineering renamed Department of Civil and Environmental Engineering to reflect emphasis on the environment and new undergraduate program in environmental engineering. School of Journalism renamed School of Journalism and Communication, and Institute of Canadian Studies becomes School of Canadian Studies. The Centre for Aboriginal Education, Research and Culture is established. A new Ph.D. program in public policy, the first of its kind in Canada, is offered by the School of Public Administration, and a master's program in Canadian art history is introduced. The Carleton University Art Gallery and the Minto Centre for Advanced Studies in Engineering are opened. The Governor General of Canada and Head of the Canadian Heraldic Authority, His Excellency the Right Honourable Ramon John Hnatyshyn, grants the arms and flag of Carleton University at the fall convocation ceremonies.

## 1993

Centre for Memory Assessment and Research established. Teaching and Learning Resource Centre established. Institute of Soviet and East European Studies renamed Institute for Central/East European and Russian Area Studies. Carleton University hosts the

1993 Learned Societies Conference. Construction begins on new Inco Centre. Institute of Women's Studies renamed Pauline Jewett Institute of Women's Studies. Administration Building renamed Robertson Hall.

#### 1994

New Industrial Research Chair in Performance Engineering of Real-Time Software established. The Inco Centre officially opened. Research Facility for Electron Microscopy opened. New Ph.D. program in Public Policy established. New Bachelor of International Business program approved. Colonel By Child Care opened. Construction begins on the new Carleton Technology and Training Centre.

#### 1995

Carleton Technology and Training Centre opened. Bachelor of Humanities undergraduate degree program established. College of the Humanities approved.

#### 1997

Two new faculties created: the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management. Department of Religion joined the College of the Humanities. School of Architecture modified its program to create a four-year degree program, with the professional designation provided by the two-year master's program. Bachelor of Arts program improved with standardization of programs across all departments and introduction of programs to allow students to improve their academic skills and to "tailor" their degrees to specific goals. Physics undergraduate degree program replaced with an applied physics program. Several small language programs closed: German, Italian, Russian, Spanish) as well as undergraduate programs in Comparative Literary Studies and Classics. New undergraduate program in Communications Engineering established. Co-operative education programs offered in all engineering programs.

The following graduate programs were established: Ph.D. in Cognitive Science; Ph.D. in Communications; Master of Arts in Film Studies; Master of Public Administration (with a Concentration in Innovation, Science, and Technology Policy); and the Graduate Certificate in Conflict Resolution.

## Chancellors

**1952 — 1954**

Harry Stevenson Southam

**1954 — 1968**

Chalmers Jack Mackenzie

**1969 — 1972**

Lester Bowles Pearson

**1973 — 1979**

Gerhard Herzberg

**1980 — 1990**

Gordon Robertson (Emeritus 1992 - )

**1990 — 1992**

Pauline Jewett

**1993 —**

Arthur Kroeger

## Presidents

**1942 — 1947**

Henry Marshall Tory

**1947 — 1955**

Murdoch Maxwell MacOdrum

**1955 — 1956**

James Alexander Gibson (acting)

**1956 — 1958**

Claude Thomas Bissell

**1958 — 1972**

Arnold Davidson Dunton

**1972 — 1978**

Michael Kelway Oliver

**January 1 — May 15, 1979**

James Downey (pro tempore)

**1979 — 1989**

William Edwin Beckel

**1989 — 1996**

Robin Hugh Farquhar

**1996 —**

Richard J. Van Loon



# Public Lectures at Carleton University

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## Major Lecture Series

A distinguished series of lectures supported by Carleton University faculties.

### The Florence Bird Lecture

This annual lecture was established in 1987 to explore the experiences of women in Canada and abroad. It is named in honour of the Honourable Florence Bird, in recognition of her work for the CBC, CIDA, the Royal Commission on the Status of Women in Canada, and the Senate. The lecture is sponsored jointly by the Faculty of Arts and Social Sciences.

### The Davidson Dunton Research Lecture

Established in 1983, the Davidson Dunton Research Lecture is presented by a Carleton University scholar who is active in research and has achieved international recognition. The lecture is in honour of former Carleton University President Arnold Davidson Dunton.

### The Gerhard Herzberg Lecture

Established in 1975 by the Faculty of Science, this lecture honours Gerhard Herzberg, a former Chancellor of Carleton University and recipient of the 1971 Nobel Prize for Chemistry. The purpose of the lecture is to emphasize the relationship between science and society and to address an aspect of science which has a pronounced impact on our daily lives.

### The Marston LaFrance Research Fellowship Lecture

The fellowship was established in 1979 by the Faculty of Arts and Social Sciences in memory of Marston LaFrance, former Professor of English and Dean of Arts at Carleton University. Each year, the recipient presents a seminar or public lecture on some aspect of the research conducted while on the LaFrance fellowship.

### The John Porter Memorial Lecture

This annual lecture is sponsored by the Faculty of Arts and Social Sciences in memory of John Porter, former Vice-President (Academic) at Carleton University and a distinguished sociologist. The series was established in 1982.

### Special Lectures

Individual lectures sponsored by various academic departments or endowments.

### The Munro Beattie Lecture

This lecture was established in 1985 in honour of Alexander Munro Beattie, the founder and first Chair of the Department of English, in recognition of his outstanding contribution to Carleton University in teaching, scholarship and administration. The series is sponsored by the Department of English.

### The Dick and Ruth Bell Lecture

Established in 1988 in honour of the late Dick Bell and Ruth Bell. The lecture will be delivered annually by distinguished scholars in the field of political science or by distinguished persons serving or having served in the public life of Canada or one of its provinces. Supported through the Dick and Ruth Bell Fund.

### The Edgar and Dorothy Davidson Lecture

The Edgar and Dorothy Davidson Lecture was established in 1983 and is sponsored by the College of the Humanities. The lecture brings a prominent scholar in the area of religious studies and related areas to speak at Carleton.

### The McMartin Memorial Lecture

The McMartin Memorial Lecture is presented in alternate years by the College of the Humanities at Carleton University and the Faculty of Graduate Studies and Research at the University of Ottawa. The series was established in 1969 and is funded by Mrs. J.P. Gilhooly of Ottawa in memory of her parents, Mr. and Mrs. John McMartin. The lectures involve themes which promote the importance of ethical, moral, and religious standards to education and living.

### The Adam Mickiewicz Memorial Lecture

Established in 1969, the Adam Mickiewicz Memorial Lecture is presented each year by noted authorities in the area of Soviet and East European Studies. The series is sponsored by Carleton University's Institute of Central/East European and Russian-Area Studies and the Adam Mickiewicz Foundation of Canada to commemorate Poland's foremost poet, Adam Mickiewicz.

### The H.H.J. Nesbitt Lecture

This annual lecture series was established in 1987 by the Faculty of Science in honour of H.H.J. Nesbitt, Carleton University's first Dean of Science. The lectures are presented by Carleton alumni who have earned international recognition as scientists. The topics are of general interest to the public as well as the scientific community.

### The Pickering Lecture

Established in 1975, the Pickering lecture topics focus on problems of developmental and childhood psychology. The Pickering Lecture is sponsored by the Department of Psychology.

### The Technology, Society, Environment Studies Committee Lecture

Established in 1981 to sensitize the public to the impact of technology on society and the environment. The lecture is sponsored by the Technology, Society and Environment Studies Committee.

### The Philip E. Uren Memorial Lecture

The Philip E. Uren Memorial Lecture is sponsored by the Dean of the Faculty of Public Affairs and Management in memory of Philip Uren, former Director of the Institute of Soviet and East European Studies, the Normal Paterson School of International Affairs, and the Paterson Centre for International Programs at Carleton University. This annual lecture was established in 1982.

# Officers of the University

## Chancellor

Arthur Kroeger, O.C., M.A., LL.D.

## President and Vice-Chancellor

Richard J. Van Loon, B.Sc., M.A., Ph.D.

## Board of Governors (1997-98)

### Chair

Robert Laughton, Q.C., B.A., LL.B.

### Vice-Chair

Marion Dewar, R.N., B.Sc.N., Dip.P.H.N.

### Ex Officio Members

The Chancellor  
The President and Vice-Chancellor

### Elected Members

*Retire June 30, 1998*

Ivan Fellegi, O.C., M.Sc., Ph.D.  
Paul Hennessey  
Tina Hill  
William Joe  
Gail Larose, B.A., M.A.  
Jocelyn Ghent Mallett, B.A., M.A., Ph.D.  
Wesley Nicol, B.A.  
Maureen O'Neil, B.A.  
Mairuth Sarsfield, CQ, B.A., M.J.  
Cecilia Van Egmond, B.A.  
Zeev Vered, B.Eng., P.Eng.  
Donald Westwood, Dip.Arch.,

*Retire June 30, 1999*

Louise Bergeron-de Villiers, B.A.  
Iris L. Craig, B.A.  
Marion Dewar, R.N., B.Sc.N., Dip.P.H.N.  
Ross Donaldson, B.A., M.A.  
Gail Harmer Mutton, B.A.  
Ole Ingstrup, B.A., LL.M., Ph.D.  
Lloyd Stanford, M.A.  
James Taggart, B.Eng.

*Retire June 30, 2000*

Martha Clark  
Linda Duxbury, B.Sc., M.A.Sc., Ph.D.  
Andrew Haydon, B.Sc.  
Robert Laughton, Q.C., B.A., LL.B.  
Allan Lumsden, C.A., B.Comm.  
Claudine Simson, B.Sc., Ph.D.

### Secretary

Donald C. McEown, C.D., B.A., Dip.Bus.Admin.

## Senate of the University (1997-98)

### Ex Officio Members

Vice-President G.S. Adam, B.J., M.A., Ph.D.  
Vice-President J.W. ApSimon, B.Sc., Ph.D.  
Dean M.J. Bibby, M.Sc., Ph.D., P.Eng.  
Dean R.C. Blockley, B.A., M.A., Ph.D.  
Assistant Professor Martien de Leeuw, B.Sc., B.I.D., M.B.A.  
Associate Professor Benjamin Gianni, B.A., M.Arch.  
Dean W.D. Jones, B.A., Ph.D.  
Professor Evangelos Kranakis, B.Sc., Ph.D.  
Chancellor Arthur Kroeger, O.C., M.A., LL.D.  
Dean A.M. Maslove, B.A., Ph.D.  
Ms H. Van Dyk  
Ms C. Van Egmond, B.A.  
President R.J. Van Loon, B.Sc., M.A., Ph.D.  
Dean P.J.S. Watson, B.Sc., Ph.D.  
Vice-President D.R. Watt, B.Eng., M.B.A.

### Board Appointees

Miss I.L. Craig, B.A.  
Mr. A. Haydon, B.Sc.  
Ms G. Mutton, B.A.  
Mr. C.L. Stanford, M.A.

### Elected Members

Professor K.S. Andonian, M.Arch., M.A.Sc., Ph.D.  
Professor J.C. Armitage, B.Sc., Ph.D.  
Mr. John Arthorne  
Associate Professor Paul Attallah, B.A., M.A., Ph.D.  
Mr. Mohamad Barakat  
Mr. Colin Betts, B.A.  
Associate Professor Michael Brklacich, B.Sc., M.A., Ph.D.  
Professor J.A. Brook, B.A., M.A., D.Phil.  
Associate Professor G.R. Carmody, A.B., Ph.D.  
Associate Professor J.W. Chinneck, B.A.Sc., M.A.Sc., Ph.D., P.Eng.  
Associate Professor S. Dandamudi, B.E., M.Tech., M.Sc., Ph.D.  
Professor W.T. Darby, B.A., M.A., Ph.D.  
Associate Professor T.B. Dawson, LL.B., LL.M.  
Associate Professor Linda Duxbury, B.Sc., M.A.Sc., Ph.D.  
Associate Professor B.S. Elliott, B.A., M.A., Ph.D.  
Professor P.C. Emberley, B.A., M.A., Ph.D.  
Associate Professor E.P. Fitzgerald, B.A., M.A., Ph.D.  
Associate Professor L. Frankel, B.F.A., Masters, M.E.D.  
Ms Claire Gilbert  
Professor A.M. Gillmor, B.Mus., M.A., Ph.D.  
Associate Professor C.C. Gordon, B.A., Ph.D.  
Associate Professor R.A. Goubran, B.Sc., M.Sc., Ph.D., P.Eng.  
Mr. Evan Hughes  
Professor A.M. Khan, B.Eng., M.Eng., Ph.D., P.Eng.  
Professor Vinod Kumar, B.Sc., B.Eng., M.Eng., Ph.D., P.Eng.  
Associate Professor R.B. Lovejoy, A.B., M.A., Ph.D.  
Associate Professor K. Matheson, B.A., M.A., Ph.D.  
Associate Professor M.J. McDill, B.Eng., M.Eng., Ph.D., P.Eng.  
Associate Professor L.T.R. McDonald, B.A., M.A., Ph.D.  
Associate Professor R.J. Mesley, B.A., M.A., Ph.D.  
Associate Professor S.E. Mills, B.Sc., M.Sc., Ph.D.  
Associate Professor B.C. Mortimer, B.Sc., M.Sc., Ph.D.  
Mr. Zamir Nathoo  
Associate Professor S. Power, B.A., M.A., Ph.D.  
Professor I.W.V. Pringle, M.A.  
Associate Professor S. Robinson, B.A., M.A.  
Associate Professor P.L. Rosen, B.A., M.A., Ph.D.  
Associate Professor R.A. Shigeishi, B.Sc., Ph.D.



## Officers of the University

Professor D.W. Smith, B.A., M. ès L., Ph.D.  
Professor M.W. Smith, B.Sc., M.A., Ph.D.  
Mr. Shannon Stamp  
Professor S.L. Sutherland, B.A., M.A., Ph.D.  
Professor D.R. Thomas, B.Sc., Ph.D., M.Sc.  
Ms Tonya Waller, B.A.

## Special Appointments

Professor C.H. Chan, B.S., M.A.Sc., Ph.D., P.Eng. (Clerk of Senate)  
Mr. Martin Foss, B.A., B.L.S.  
Mr. D. Saveland, B.A.  
Mr. D. Thomson, M.C.S.

## Officers of Administration

### *President and Vice-Chancellor*

Richard J. Van Loon, B.Sc., M.A. (Carleton) Ph.D. (Queen's)

### *Vice-President (Academic) and Registrar*

G. Stuart Adam, B.J., M.A. (Carleton) Ph.D. (Queen's)

### *Vice-President (Research and External)*

John W. ApSimon, B.Sc., Ph.D. (Liverpool)

### *Vice-President (Finance and Administration)*

Duncan R. Watt, B.Eng. (Royal Military College) M.B.A. (Ottawa)

### *Assistant Vice-President (Enrolment Management)*

Susan Gottheil, B.A. (McGill) M.A. (Sarah Lawrence)

### *Dean of the Faculty of Graduate Studies and Research*

Roger C. Blockley, B.A. (Leicester) M.A. (McMaster) Ph.D. (Nottingham)

### *Dean of the Faculty of Arts and Social Sciences*

William D. Jones, B.A., Ph.D. (Sheffield)

### *Dean of the Faculty of Engineering*

Malcolm J. Bibby, M.Sc., Ph.D. (Alberta) P.Eng.  
(until June 30, 1998)

### *Dean of the Faculty of Public Affairs and Management*

Allan M. Maslove, B.A. (Manitoba) Ph.D. (Minnesota)

### *Dean of the Faculty of Science*

Peter J.S. Watson, B.Sc., (Edinburgh) Ph.D. (Durham)

### *Dean of Students*

Leonard T. Librande, B.A. (St. Louis) M.A. (Syracuse) Ph.D. (McGill)

### *Associate Dean of the Faculty of Graduate Studies and Research*

P. Rianne Mahon, B.A. (York) M.A., Ph.D. (Toronto)

### *Associate Dean of the Faculty of Arts and Social Sciences (Undergraduate Affairs)*

Roger B. Wells, B.A (Reed) M.A., Ph.D. (North Carolina) C.Psych.

### *Associate Dean of the Faculty of Arts and Social Sciences (Research and Development)*

Aviva K. Freedman, B.A. (McGill) M.A. (Columbia) Ph.D. (Montréal)

### *Associate Dean of the Faculty of Engineering*

Ata M. Khan, B.Eng., M.Eng. (American University of Beirut) Ph.D. (Waterloo) P.Eng.

### *Associate Dean of the Faculty of Public Affairs and Management (Undergraduate Programs)*

Eileen M. Saunders, B.A. (St. Francis Xavier) M.A. (Queen's) Ph.D. (Carleton)

### *Associate Dean of the Faculty of Science*

Brian C. Mortimer, B.Sc. (Carleton) M.Sc. (Alberta) Ph.D. (London)

### *Associate Dean of the Faculty of Science*

Iain B. Lambert, B.Sc. (Guelph) Ph.D. (McMaster)

### *Director of the School of Architecture*

S. Gulzar Haider, B.Sc. (West Pakistan) M.S., B.Arch., Ph.D. (Illinois)  
(July 1, 1998 to December 31, 1998)

Benjamin Gianni, B.A. (Pennsylvania) M.Arch. (Yale)  
(as of January 1, 1999)

### *Director of the School of Business*

Vinod Kumar, B.Sc. (Agra), B.Eng. (Roorke), M.Eng. (California at Berkeley), Ph.D. (Manitoba), P.Eng.

### *Director of the School of Canadian Studies*

Pat Armstrong, B.A. (Toronto) M.A., Ph.D. (Carleton)

### *Director of the School of Computer Science*

Evangelos Kranakis, B.Sc. (Athens) Ph.D. (Minnesota)

### *Director of the School of Industrial Design*

Martien de Leeuw, B.Sc. (Waterloo) B.I.D. (Carleton) M.B.A. (Ottawa)

### *Director of the Norman Paterson School of International Affairs*

Martin Rudner, B.A., M.A. (McGill) M.Litt. (Oxford) Ph.D. (Jerusalem)

### *Director of the School of Journalism and Communication*

Christopher T. Dornan, B.J. (Carleton) M.A. (Cambridge) Ph.D. (McGill)

### *Director of the School of Public Administration*

Frances D. Abele, B.A. (Calgary, Toronto) M.A., Ph.D. (York)

### *Director of the School of Social Work*

Allan Moscovitch, B.A. (Carleton) M.A. (Essex)

### *Director of the School for Studies in Art and Culture*

To be announced

### *Director of the School of Languages, Literatures and Comparative Literary Studies: German, Italian, Russian, Spanish and Comparative Literary Studies*

P.J. Roster, Jr., M.A., Ph.D. (Rutgers)

### *Director of the School of Linguistics and Applied Language Studies*

Ian W.V. Pringle, M.A. (Auckland)

### *Director of the College of the Humanities*

Peter Emberley, B.A. (British Columbia) M.A. (Toronto) Ph.D. (London School of Economics)

### *University Librarian*

Martin Foss, B.A. (Alberta) B.L.S. (British Columbia)

### *Chief Information Officer*

Sally Hansen, B.A. (Syracuse)

### *Executive Director of Development and Alumni Services*

Susan Doyle, B.A., M.Ed. (St. Mary's) M.A. (Carleton)

### *Director of Carleton International*

K.J. McGillivray, B.A. (Carleton) Ph.D. (London)

### *Director of Carleton University Art Gallery*

Michael Bell, B.A., M.A. (Toronto)

*Director of Equity Services*  
To be announced

*Director of Finance*  
J.T. Sullivan, B.A. (McGill) C.G.A.

*Director of Government and Community Liaison*  
Patrick C. O'Brien, B.A., D.P.A. (Carleton)

*Director of Health Services*  
David R. Pfeiffer, M.D. (Ottawa) C.C.F.P.

*Director of Housing and Food Services*  
David L. Sterritt, B.A. (Carleton)

*Director of Human Resources*  
Richard A. Brown, B.A. (Carleton)

*Director of Instructional Media Services*  
Ross Mutton, B.A.A. (Ryerson)

*Director of Instructional Television (itv)*  
Robin Allardyce, B.A.A. (Ryerson), M.A. (Concordia)

*Director of Internal Audit and Advisory Services*  
Keith Gibbs, B.A., M.A. (McGill) C.A.

*Director of Institutional Research*  
William Pickett, B.Sc. (British Columbia) M.Sc., M.A. (Carleton)

*Director of Pension Fund Management*  
Elizabeth B. Springer, B.A. (Smith) M.B.A. (Boston) C.A.

*Acting Director of the Physical Plant*  
Duncan R. Watt, B.Eng. (Royal Military College) M.B.A. (Ottawa)

*Director of Physical Recreation and Athletics*  
G.A. (Drew) Love, B.A., M.A. (Carleton) M.B.A. (Ottawa)

*Director of the School of Continuing Education*  
Bernadette Landry, B.A. (Ottawa)

*Director of the Science Technology Centre*  
Douglas Wong, B.Eng. (Carleton)

*Director of Student Awards*  
Carol Fleck

*Director of University Communications*  
Heather Brown, B.A. (Queen's)

*Director of University Safety and Parking*  
Mark Tinlin, OSU, C.D., B.A. (Carleton) Dip.P.S. (Western Ontario), C.E.S.

*Director of University Services and Purchasing*  
Edward Kane, B.A. (Ulster)

*University Secretary*  
Nancy Adamson, B.A. (Mt. Holyoke) M.A. (Emory) Ph.D., B.Sc.N. (Toronto)

## Librarians

Heather Britt, B.Mus. (Mount Allison) M.L.S. (Western Ontario)  
Laurie G. Campbell, B.A. (Queen's) B.A. (Carleton) M.L.S. (Western Ontario)  
Janet D. Carson, B.A. (Bishop's) B.A. (Ottawa) M.A., M.L.S. (Western Ontario)  
Gail Catley, B.Sc., M.L.S. (McGill)  
Terry Clark, B.A. (Winnipeg) M.A. (Manitoba) M.L.S. (Western Ontario)  
Bozena Clarke, B.A. (Carleton) B.L.S. (Ottawa) M.L.S. (Toronto)  
Ingrid Draayer, B.A., M.L.S. (Toronto)  
P.K.G. Filotas, B.A., B.L.S. (Toronto)  
Martin Foss, B.A. (Alberta) B.L.S. (British Columbia)  
J. Fraser, B.A. (Queen's) B.L.S. (Toronto)  
Alison Hall, B.A., B.Mus. (Carleton), A.L.A.  
J. David Holmes, B.A., M.A. (Cambridge), Ph.D. (Keele), M.L.S. (Western Ontario)  
Anita Hui, B.A. (Hong Kong) M.A. in Library Science (Wisconsin) Cert. of Advanced Studies (Chicago)  
Susan L. Jackson, B.A. (Carleton) B.L.S. (McGill)  
Isla Jordan, B.Sc. (Waterloo) M.Sc. (Montréal) M.L.I.S. (Western Ontario)  
Callista Kelly, B.A. (Carleton) B.L.S. (Ottawa)  
Elizabeth R. Knight, B.A. (Winnipeg) B.L.S. (British Columbia)  
Frances S. Montgomery, M.A. (Carleton) M.L.S. (Toronto)  
Colleen Neely, B.A. (Carleton) M.L.I.S. (Western Ontario)  
L. Palacek, Prom. Phil. (Charles, Prague)  
Dorothy Rogers, B.A. (Wellesley) B.L.S. (Toronto) M.A. (Yale)  
Linda S. Rossman, B.Math. (Waterloo) M.L.S. (Toronto)  
Janice Scammell, B.A., M.A. (Carleton) M.L.I.S. (Western Ontario)  
Tatiana Schneider, B.S.C. (State University, USSR) M.L.S. (McGill)  
Judy Senecal, B.Sc., M.L.I.S. (McGill)  
Ene M. Tikovi, B.A., M.L.S. (McGill)



# Officers of Instruction

## Professors, Associate Professors, Assistant Professors, Lecturers and Instructors

Abd El Halim, A.O.	Civil and Environmental Engineering	Bell, Keith	Earth Sciences
Abdo, Nahla	Sociology and Anthropology	Bell, Robert	Mechanical and Aerospace Engineering
Abel, Kerry	History	Bellamy, David	Political Science
Abele, Frances D.	Public Administration	Bennett, David	Geography and Environmental Studies
Acheson, A.L. Keith	Economics	Bennett, Scott E.	Political Science
Adam, G. Stuart	Journalism and Communication	Bennett, Y. Aleksandra	History
Advokaat, Linda	Social Work	Bernstein, Jeffrey I.	Economics
Afagh, F.F.	Mechanical and Aerospace Engineering	Bibby, Malcolm J.	Mechanical and Aerospace Engineering
Alboim, Elly	Journalism and Communication	Bienefeld, Manfred A.	Public Administration
Alexander, Jon	Political Science	Bieszczad, Andrzej	Systems and Computer Engineering
Alvi, Shahid	Sociology and Anthropology	Bird, Roger	Journalism and Communication
Anderson, Leigh	Public Administration	Black, F.W.	Mechanical and Aerospace Engineering
Andonian, K.S.	Architecture	Black, J. Laurence	History
Andrews, Donald A.	Psychology	Blenkinsop, John	Earth Sciences
Anisman, Hymie	Psychology	Blockley, R.C.	Classics
Anselmi, William	Italian	Blundell, Valda J.	Sociology and Anthropology
ApSimon, J.W.	Chemistry	Bohm, Arnd	German; Comparative Literary Studies
Armitage, J.C.	Physics	Bordeleau, Francis	Computer Science
Armstrong, Hugh	Social Work; Political Economy; Sociology and Anthropology	Bose, Amitava	Mathematics and Statistics
Armstrong, Keir	Economics	Bose, Prosenjit	Computer Science
Armstrong, Pat	Canadian Studies; Sociology and Anthropology	Boutin, J.G.	Physics
Arnup, Katherine	Canadian Studies	Braaksma, John P.	Civil and Environmental Engineering
Artemev, A.V.	Mechanical and Aerospace Engineering	Brecher, Richard Alan	Economics
Artemeva, Natalia	Linguistics and Applied Language Studies	Bressani, Martin	Architecture
Atkinson, Gail M.	Earth Sciences	Brklacich, Michael	Geography and Environmental Studies
Attallah, Paul	Journalism and Communication	Brook, J.A.	Philosophy
Bailetti, A.J.	Business; Systems and Computer Engineering	Brown, Chris	Political Science
Bailey, Donald L.	Systems and Computer Engineering	Brown, R.L.	Earth Sciences
Barber, Marilyn J.	History	Buchanan, Gerald W.	Chemistry
Barratt, Glynn	Russian; Comparative Literary Studies	Buhr, Raymond J.A.	Systems and Computer Engineering
Barrington, Peter E.	Mechanical and Aerospace Engineering	Buist, Peter H.	Chemistry
Bartholomew, Amy L.	Law	Burk, R.C.	Chemistry
Basseville, Vincent	French	Burke, Brenda	French
Bauer, G.E.	Civil and Environmental Engineering	Burn, Chris	Geography and Environmental Studies
Bawagan, Alexis D.O.	Chemistry	Burns, Brian P.	Industrial Design
Beddoes, Jonathan C.	Mechanical and Aerospace Engineering	Callahan, John R.	Business; Systems and Computer Engineering
Beecher, Donald A.	English Language and Literature	Cameron, M. Ian	English Language and Literature
Beer, D.G.	Classics	Cameron, Maxwell A.	International Affairs
Bell, J. Barry	Architecture	Campbell, J.D.	English Language and Literature
		Campbell, R. Lynn	Law
		Caputo, Tullio C.	Sociology and Anthropology
		Cardy, Patrick R.T.	Music
		Carment, David B.	International Affairs
		Carmichael, Calum M.	Public Administration

Carmody, George R.	Biology	Dean, David	History
Carnegie, R.K.	Physics	DeBardeleben, J.	Central/East European and Russian-Area Studies; Political Science
Carr, Angela	Art History	Dehejia, Vivek H.	International Affairs
Carr, Brenda J.	English Language and Literature	Dehne, Frank	Computer Science
Carr, Sharon D.	Earth Sciences	DeKeseredy, W.S.	Sociology and Anthropology
Carson, Richard Lee	Economics	de Leeuw, Martien	Industrial Design
Chaly, Nathalie	Biology	Della Sala, Vincent	Political Science
Champagne, Pascale	Civil and Environmental Engineering	Demers, Fanny	Economics
Chan, Chong Hon	Electronics	Demers, Michel	Economics
Chandler, Andrea S.	Political Science	de Montigny, Gerald	Social Work
Cheetham, James J.	Biology	De Pourbaix, R.K.T.	Linguistics and Applied Language Studies
Chen, Zhiqi	Economics	Deugo, Dwight	Computer Science
Cherry, Frances	Psychology	Devetsikiotis, Mihail	Systems and Computer Engineering
Chevalier, J.	Sociology and Anthropology; Comparative Literary Studies	de Vries, John	Sociology and Anthropology
Chinneck, John W.	Systems and Computer Engineering	Dickson-Gilmore, Jane	Law
Chouchani, George E.	Linguistics and Applied Language Studies	Dillon, R.F.	Psychology
Choudhri, E.U.	Economics	Dion, Chantal	French
Churchman, Nancy	Economics	Dion Stout, Madeleine	Canadian Studies
Clarke, John	Geography and Environmental Studies	Dix, George R.	Earth Sciences
Clarke-Okah, Ann	Business	Dixon, J.D.	Mathematics and Statistics
Clement, Wallace	Sociology and Anthropology	Doern, G.B.	Public Administration
Compeau, Deborah R.	Business	Dolan, M.B.	Political Science
Copeland, Miles	Electronics	Donner, Wendy	Philosophy
Coplan, Robert J.	Psychology	Dorland, Michael	Journalism and Communication
Copley, Leslie A.	Physics	Dornan, C. T.	Journalism and Communication
Cordier-Gauthier, C.	French	Doubleday, Nancy	Geography and Environmental Studies
Corriveau, Jean-Pierre	Computer Science	Dourley, John P.	Religion
Cove, John J.	Sociology and Anthropology	Doutrelepoint, Charles	French
Cowan, William G.,	Linguistics and Applied Language Studies	Drydyk, Jay	Philosophy
Cox, Bruce A.	Sociology and Anthropology	Dubicanac, Tom	Architecture
Cray, David	Business; Sociology and Anthropology	Dubrule, Diane E.	Philosophy
Cray, Ellen	Linguistics and Applied Language Studies	Duchemin, Parker	English Language and Literature
Crossman, Kelly J.	Art History	Dupuis, Lynda	French
Crutchley, Robert J.	Chemistry	Dutkiewicz, Piotr	Political Science
Csörgö, Miklos	Mathematics and Statistics	Duxbury, Linda	Business
Currie, Patricia M.	Linguistics and Applied Language Studies	Dyke, Lorraine	Business
Curtis, Bruce	Sociology and Anthropology	Eaman, Ross A.	Journalism and Communication
Dalby, S.	Geography and Environmental Studies	Earl, Christine	Geography and Environmental Studies
Damman, Hans	Biology	Edwards, Kenneth W.	Physics
Dandamudi, S.	Computer Science	Edwards, Mary Jane	English Language and Literature
Daniels, Tina	Psychology	Egyed, B.I.	Philosophy
Darby, W.T.	Political Science	El-Tanany, M.S.	Systems and Computer Engineering
Darville, Richard	Linguistics and Applied Language Studies	Elliott, B.S.	History
Davidson, Paul J.	Law	Elliott, David W.	Law
Davies, Maureen	Law	Elwood, R. Carter	History
Davis, Eric G.	Economics	Emberley, Peter	Political Science; Philosophy
Dawson, Donald	Mathematics and Statistics	Erard, Brian	Economics
Dawson, T. Brettel	Law	Fahrig, Lenore	Biology
		Falconer, David D.	Systems and Computer Engineering
		Farquhar, Robin H.	Public Administration
		Faulkner, C. G.	Film Studies



# Officers of Instruction

Ferris, J.S.	Economics	Haider, S. Gulzar	Architecture
Fiala, Frantisek	Computer Science	Haines, George H.	Business
Finn, Geraldine	Cultural Studies	Halsall, Albert	French
Fitzgerald, E.P.	History	Hampson, Fen O.	International Affairs
Fong, Che-Kao	Mathematics and Statistics	Hanes, Roy	Social Work
Fontein, Lucie	Architecture	Hartley, Gilbert A.	Civil and Environmental Engineering
Forbes, Mark R.L.	Biology	Hauptman, Oscar	Business
Forcese, Dennis P.	Sociology and Anthropology	Hay, Keith A.J.	Economics
Forth, Adelle E.	Psychology	Healy, John J.	English Language and Literature
Fournier, Robert	French	Heidemann, A.W.	English Language and Literature
Fox, Janna	Linguistics and Applied Language Studies	Henighan, T.J.	English Language and Literature
Fox, Michael	Geography and Environmental Studies	Herauf, J.D.	Business
Frajkor, Jan George	Journalism and Communication	Herdman, Chris M.	Psychology
Frankel, Lois	Industrial Design	Hernandez, F.	Humanities; Comparative Literary Studies
Fraser, Donald	Law	Herz-Fischler, Roger	Mathematics and Statistics
Freedman, Aviva K.	Linguistics and Applied Language Studies	Heslop, Louise A.	Business
Freeman, Barbara	Journalism and Communication	Hick, Steven	Social Work
Freeman, Linda	Political Science	Hillmer, G. Norman	History
Fried, P.A.	Psychology	Hoge, Robert D.	Psychology
Frize, Monique	Systems and Computer Engineering	Hogg, Robert L.	English Language and Literature
Frizzell, Alan	Journalism and Communication	Hollebone, Bryan R.	Chemistry
Gabriel, Barbara	English Language and Literature	Holtz, Neal M.	Civil and Environmental Engineering
Gao, Zhicheng	Mathematics and Statistics	Humar, Jagmohan Lal	Civil and Environmental Engineering
Garner, Barbara C.	English Language and Literature	Hunt, A.J.	Law; Sociology and Anthropology
Garner, Cyril W.L.	Mathematics and Statistics	Jackson, Marion E.	Art History
Gaydos, J.A.	Mechanical and Aerospace Engineering	Jackson, Richard L.	Linguistics and Applied Language Studies
Gerwin, Donald	Business; Systems and Computer Engineering	Jacobsen, Carl G.	Political Science
Gianni, Benjamin	Architecture	Jarosz, Boguslaw	Physics
Giard, Jacques R.	Industrial Design	Jaworski, Wojciech	Mathematics and Statistics
Gibbons, Anna L.	Business	Jeffreys, R.	Classics
Gick, Mary L.	Psychology	Jenkins, Barbara	Political Science
Giella, M.A.	Spanish	Jennissen, Therese	Social Work
Giles, Jennifer	Music	Jhappan, C. Radha	Political Science
Gillingham, Bryan R.	Music	Jog, Vijay M.	Business
Gillmor, Alan Murray	Music	Johansen, Peter	Journalism and Communication
Given, Brian J.	Sociology and Anthropology	Johns, Paul C.	Physics
Glass, Marvin	Philosophy	Johnson, Barclay D.	Sociology and Anthropology
Godfrey, Stephen	Physics	Jones, C.S.	Linguistics and Applied Language Studies
Goheen, Jutta	German; Comparative Literary Studies	Jones, William D.	Psychology
Goheen, R.B.	History	Judge, Shirley	Social Work
Goldak, John A.	Mechanical and Aerospace Engineering	Junker, M.	French
Goodwin, Grover F.	History	Kabir, A.B.M.L.	Mathematics and Statistics
Gordon, Charles C.	Sociology and Anthropology; Architecture	Kalyniak, Patricia Ann	Physics
Gorham, Deborah S.	History	Karlen, D.A.	Physics
Goubran, Rafik A.	Systems and Computer Engineering	Karman, Deniz	Civil and Environmental Engineering
Gould, Robert D.	German	Kealey, Juliette	French
Graham, Katherine A.H.	Public Administration	Keil, Jared Tao	Sociology and Anthropology
Hafez, R.H.M.	Systems and Computer Engineering	Keillor, Elaine	Music
		Kellner, Florence J.	Sociology and Anthropology
		Kelly, J.B.	Psychology

Kelly, Katharine D.	Sociology and Anthropology	Loten, H. Stanley	Architecture
Kennedy, Stephen J.	Civil and Environmental Engineering	Lovejoy, Robert B.	English Language and Literature
Kersten, Gregory E.	Business	Luckyj, Natalie	Art History
Khan, Ata M.	Civil and Environmental Engineering	Lumb, Lionel	Journalism and Communication
Kiggundu, Moses N.	Business	Lundberg, Joyce	Geography and Environmental Studies
Kind, R.J.	Mechanical and Aerospace Engineering	Lundy, Colleen	Social Work
King, Douglas J.	Geography and Environmental Studies	Luther, Rashmi	Social Work
King, Peter John	History	Macdonald, Laura	Political Science
Klebanoff, Randi Paula	Art History	MacFadden, Patrick	Journalism and Communication
Klodawsky, Fran	Geography and Environmental Studies; Women's Studies	Mackenzie, A. Fiona D.	Geography and Environmental Studies; International Affairs
Knight, J.P.	Electronics	MacKenzie, James A.	Law
Kovalio, Jacob	History	Mackenzie, Suzanne	Geography and Environmental Studies
Kranakis, Evangelos	Computer Science	MacLeod, Marion J.	Mathematics and Statistics
Kristiansen, Connie M.	Psychology	MacNeil, Catherine	Linguistics and Applied Language Studies
Krizanc, Danny	Computer Science	MacNeil, Michael J.	Law
Kruus, Peeter	Chemistry; Technology, Society, Environment Studies	Madill, Judith J.	Business
Kumar, Uma	Business	Maheshwari, Anil	Computer Science
Kumar, Vinod	Business	Mahmoud, Samy A.	Systems and Computer Engineering
Kunz, Thomas	Systems and Computer Engineering	Mahon, P. Rianne	Public Administration
Kwasniewski, T.A.	Electronics	Majumdar, S.	Systems and Computer Engineering
Kymlicka, Will	Philosophy	Majury, Diana	Law
Lai, Edward P.C.	Chemistry	Mann, Lindsay A.	English Language and Literature
Laird, Robert G.	English Language and Literature	March, Karen	Sociology and Anthropology
Laird, Walter Roy	History	Marks, Laura U.	Film Studies
LaLonde, W.R.	Computer Science	Marlin, Randal R.A.	Philosophy
Lambadaris, Ioannis	Systems and Computer Engineering	Maroney, Heather Jon	Sociology and Anthropology
Lambert, Iain B.	Biology; Biochemistry	Marshall, Dominique	History
Langer, Mark J.	Film Studies	Martin, Michèle	Journalism and Communication; Sociology and Anthropology
Lanthier, Mark	Computer Science	Marwah, Kanta	Economics
Larson, R.	Spanish	Maslove, Allan M.	Public Administration
Lau, David T.	Civil and Environmental Engineering	Mason, Ralph D.	Electronics
Laubstein, Ann S.	Linguistics and Applied Language Studies	Matheson, K.	Psychology
Laughlin, Charles D.	Sociology and Anthropology	Maurice, Jacques	Business
Law, K.T.	Civil and Environmental Engineering	May, L.E.	Mathematics and Statistics
Lawson, W.M.	Business	McConomy, Bruce	Business
Le Berrurier, Diane O.	Art History	McCully, Margaret E.	Biology
Leckie, Barbara L.	English Language and Literature	McDill, Moyra J.	Mechanical and Aerospace Engineering
Lee, Ian	Business	McDonald, L.T.R.	English Language and Literature
LeFevre, Jo-Anne	Psychology	McDowall, Duncan L.	History
Levenson, Christopher	English Language and Literature	McFetridge, Donald G.	Economics
Librande, Leonard T.	Religion	McGuire, Mary	Journalism and Communication
Lin, Zhiqiu	Sociology and Anthropology	McIntyre, Dan C.	Psychology
Lipsett-Rivera, Sonya	History	McKercher, Catherine	Journalism and Communication
Little, Brian R.	Psychology	McKie, C.	Sociology and Anthropology
Logan, John	Psychology	McKillop, A.B.	History
Logie, Susan	Linguistics and Applied Language Studies	McKnight, George	Film Studies
Loiselle, Andre	Film Studies	McMahon, M.	Law; Sociology and Anthropology
Long, David P.	International Affairs	McManus, John C.	Economics
Loriggio, F.G.	Italian; Comparative Literary Studies	McMullin, S.E.	Canadian Studies



Medway, Peter G.	Linguistics and Applied Language Studies; Sociology and Anthropology	Papadopoulos, Nicolas	Business
Mehmet, Ozay	International Affairs	Pappas, Bruce A.	Psychology
Melkonian, Sam	Mathematics and Statistics	Paquet, Lise	Psychology
Merkley, Paul C.	History	Park, Soo Bin	Economics
Merriam, H. Gray	Biology	Parker, Wayne J.	Civil and Environmental Engineering
Mesley, Roger J.	Art History	Parlow, Shelley E.	Psychology
Michalowski, Wojciech	Business	Patterson, Danny	Geography and Environmental Studies
Michel, Frederick A.	Earth Sciences	Patterson, R. Timothy	Earth Sciences
Miller, J. David	Chemistry	Pearce, Trevor	Systems and Computer Engineering
Mills, Shirley	Mathematics and Statistics	Peck, Stewart	Biology
Mingarelli, Angelo B.	Mathematics and Statistics	Petriu, Dorina C.	Systems and Computer Engineering
Mogridge, Basil	German	Petrusic, William M.	Psychology
Mohr, Renate M.	Law	Phillips, Roderick	History
Mojirsheibani, Majid	Mathematics and Statistics	Phillips, Susan D.	Public Administration
Molot, Maureen A.	International Affairs; Political Science	Picard, Cheryl	Law
Moore, M.J.	Mathematics and Statistics	Pick, Zuzana M.	Film Studies
Moreau, Bemice	Social Work	Pilkey, Keith	Mechanical and Aerospace Engineering
Morris, L. Robert	Systems and Computer Engineering	Piper, Deirdre J.	Music
Mortimer, Brian C.	Mathematics and Statistics	Plett, Calvin	Electronics
Mosco, Vincent	Journalism and Communication; Sociology and Anthropology	Plett, E.G.	Mechanical and Aerospace Engineering
Moscovitch, Allan S.	Social Work	Pohle, Klaus	Journalism and Communication
Muise, D.A.	History	Poland, John C.	Mathematics and Statistics
Munro, I.	Earth Sciences	Pollard, George	Social Sciences
Mytelka, Lynn K.	Political Science	Pottier, Daniel B.	Journalism and Communication
Nakhla, Michael	Electronics	Power, Simon	Economics
Nel, L.D.	Mathematics and Statistics	Prashker, Steven	Geography and Environmental Studies
Nel, Louis D.	Computer Science	Prattis, J. Ian	Sociology and Anthropology
Newell, Waller R.	Political Science; Philosophy	Pressman, Irwin S.	Mathematics and Statistics
Newton, Keith	Public Administration	Prikryl, Yoko Azuma	Linguistics and Applied Language Studies
Nollet, T.G.	English Language and Literature	Pringle, Ian W.V.	Linguistics and Applied Language Studies
Norminton, Edward J.	Mathematics and Statistics	Pychyl, Timothy A.	Psychology
Nosanchuk, T.A.	Sociology and Anthropology	Rajaei, Farhang	Political Science
O'Brien, Charles	Art and Culture	Rakusan, J.	Linguistics and Applied Language Studies
O'Brien, Waltraud	Linguistics and Applied Language Studies	Ralph, Diana	Social Work
O'Donnell, Kathleen	English Language and Literature	Ramisch, Joseph G.	Religion
Ogilvie, M.H.	Law	Ranalli, Giorgio	Earth Sciences
Oommen, John B.	Computer Science	Rankin, L. Pauline	Canadian Studies
Oppacher, Franz	Computer Science	Rao, J.N.K.	Mathematics and Statistics
Osabu-Kle, Daniel T.	Political Science	Ray, D. Michael	Geography and Environmental Studies
Osei Kwadwo Prempeh, Edward	Political Science	Ray, T.G.	Electronics
Otoo, Ekow J.	Computer Science	Razaqpur, A.G.	Civil and Environmental Engineering
Ozomoy, G.I.	Geography and Environmental Studies	Reichstein, Irwin	Computer Science
Padolsky, Enoch D.	English Language and Literature	Resnick, Lazer	Physics
Pagurek, B.	Systems and Computer Engineering	Ribes, Luis	Mathematics and Statistics
Pal, Leslie A.	Public Administration	Richarz, W.G.	Mechanical and Aerospace Engineering
Pal, Siva	Business	Richter, R. Bruce	Mathematics and Statistics
Paltiel, Jeremy T.	Political Science	Riding, A.L.	Business
Pammett, Jon H.	Political Science	Riordon, J.S.	Systems and Computer Engineering
Pandey, J.N.	Mathematics and Statistics		
Panico, G.	Italian		

Ritter, Archibald R.M.	Economics; International Affairs	Smith, Donald W.	French
Roberts, David C.S.	Psychology	Smith, Douglas A.	Economics
Robinson, Fiona	Political Science	Smith, Julian	Canadian Studies
Robinson, S.	French	Smith, Michael W.	Geography and Environmental Studies
Rocher, François	Political Science	Smith, Miriam	Political Science
Rolia, Jerome	Systems and Computer Engineering	Smith, Myron Lloyd	Biology
Romo, William J.	Physics	Smy, Tom J.	Electronics
Rosse, D.	French	Snelgrove, W. Martin	Electronics
Roster, P.J.	Spanish	Squire, Shelagh J.	Geography and Environmental Studies
Rothman, Eugene	Religion	Sridhar, Sampat	Civil and Environmental Engineering
Rowe, P. Nicholas	Economics	Srinivasan, Vasanthi	Humanities
Rowlands, Dane	International Affairs	Srivastava, Ashwani K.	Business
Rudner, Martin	International Affairs	Stainton, R.J.	Philosophy; Linguistics and Applied Language Studies
Ruffo, Armand	English Language and Literature	Staley, D.A.	Mechanical and Aerospace Engineering
Rupert, Robert	Journalism and Communication	Stasiulis, Daiva K.	Sociology and Anthropology
Ruprecht, A.	French	Steele, James	English Language and Literature
Ruprecht, Hans-George	Linguistics and Applied Language Studies; French	Steffens, Caryl	Sociology and Anthropology
Russell, Donald L.	Mechanical and Aerospace Engineering	Storey, K.B.	Biology; Chemistry; Biochemistry
Ryan, Philip	Public Administration	Stout, Cheryl Ann	Public Affairs and Management
Sabanadze, Marina	Linguistics and Applied Language Studies	Straznicky, P.V.	Mechanical and Aerospace Engineering
Sack, Jorg-Rudiger	Computer Science	Strickland, Lloyd H.	Psychology
Sakamoto-Jog, Emi	Linguistics and Applied Language Studies	Suter, G.T.	Civil and Environmental Engineering
Salinas-Pacheco, J.J.	Civil and Environmental Engineering	Sutherland, Sharon	Political Science
Salmond, Noel A.	Humanities; Religion	Sutton, Gilbert F.	Architecture
Santoro, Nicola	Computer Science	Swan, Peter	Law
Santyr, Giles E.	Physics	Swartz, Donald G.	Public Administration
Sargent, C. Neil	Law	Swimmer, Eugene	Public Administration
Sarma, Nandini	French	Syrett, B.A.	Electronics
Sasiadek, J.Z.	Mechanical and Aerospace Engineering	Szabo, Franz A.J.	History
Saulis, Malcolm	Social Work	Szyszkowicz, Barbara	Mathematics and Statistics
Saunders, Eileen M.	Journalism and Communication	Taiana, Cecilia	Social Work
Saunders, Ronald P.	Law	Tait, David	Journalism and Communication
Schaller, Huntley	Economics	Tait, R. Niall	Electronics
Schembri Lawrence L.	Economics	Tan, C.L.	Mechanical and Aerospace Engineering
Schröder-Adams, C.	Earth Sciences	Tansley, Brian W.	Psychology
Schwartz, H.M.	Systems and Computer Engineering	Tarr, N. Garry	Electronics
Schwartz, Saul	Public Administration	Taylor, D.R.F.	Geography and Environmental Studies; International Affairs
Sénéchal, M.	Psychology	Taylor, J.H.	History
Sheikh, A.U.H.	Systems and Computer Engineering	Taylor, Richard P.	Earth Sciences
Shepherd, John	Music; Sociology and Anthropology	Tepper, E.L.	Political Science
Shields, Rob	Sociology and Anthropology	Thérien, Christiane	French
Shigeishi, Ronald A.	Chemistry	Thomas, D. Roland	Business
Siltanen, Janet	Sociology and Anthropology	Thompson, Aileen	Economics
Sinclair, J.	Biology	Thomgate, Warren B.	Psychology
Sjolander, S.A.	Mechanical and Aerospace Engineering	Tilson, Alistair	English Language and Literature
Skippen, George B.	Earth Sciences	Tolley, Trevor	English Language and Literature
Smart, Patricia	French; Comparative Literary Studies	Tombaugh, T.N.	Psychology
Smith, Derek G.	Sociology and Anthropology	Tomlin, Brian W.	International Affairs
		Toner, Glen	Public Administration



Torrance, James K.	Geography and Environmental Studies	Wigfield, Donald C.	Chemistry
Tsai, Chishium S.	Chemistry; Biochemistry	Wight, J.S.	Electronics
Tunbridge, J.E.	Geography and Environmental Studies	Wilkinson, Thomas P.	Geography and Environmental Studies
Unger, Loma	Business	Williams, Glen	Political Science
van der Puije, P.D.	Electronics	Williams, K.S.	Mathematics and Statistics
Van Geel, Paul	Civil and Environmental Engineering	Wilson, S.G.	Religion
Van Loon, Richard J.	Political Science	Winer, Stanley Lewis	Public Administration
Van Vlasselaer, J.J.	French	Winn, Conrad J.	Political Science
Vickers, Jill McCalla	Political Science; Canadian Studies	Winseck, Dwayne R.	Journalism and Communication
Vierula, P. John	Biology	Wong, Jo-Yung	Mechanical and Aerospace Engineering
Vincent-Smith, Brigitte	French	Wood, Jo	Psychology
von Riekhoff, Harald	Political Science	Woods, Devon H.	Linguistics and Applied Language Studies
Walker, Gillian	Social Work; Sociology and Anthropology	Woods, Gurli A.	Comparative Literary Studies
Walker, Pamela J.	History	Woodside, C.M.	Systems and Computer Engineering
Walkey, David J.	Electronics	Woolley, Frances	Economics
Wallace, A.I.	Geography and Environmental Studies	Worswick, Michael J.	Mechanical and Aerospace Engineering
Walton, Priscilla	English Language and Literature	Wozniak, B.J.	Industrial Design
Wang, Zhi Yuan	Chemistry	Wright, J. Barry	Law
Warskett, Rosemary E.	Law; Sociology and Anthropology	Wright, James S.	Chemistry
Watkinson, D.H.	Earth Sciences	Wu, Shu Hui	Psychology
Watson, P.J.S.	Physics	Wyndham, R.C.	Biology
Weatherhead, P.J.	Biology	Yaras, Metin I.	Mechanical and Aerospace Engineering
Wegner, John	Biology	Young, Lynne	Linguistics and Applied Language Studies
Wells, Roger B.	Psychology	Zacharko, Robert M.	Psychology
Welsh, Michael E.	Classics	Zhang, Qi-jun	Electronics
Westwood, Donald	Architecture	Zobl, Helmut	Linguistics and Applied Language Studies
Whitmore, Elizabeth	Social Work		
Whitney, Susan	Women's Studies		
Wiebe, Martha	Social Work		

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